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[WITH SIX PLATES.]

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OF THE
LINNEAN SOCIETY
OF NEW SOUTH WALES.

WEDNESDAY, JANUARY 27TH, 1881.

The President, J. C. Cox, Esq., M.D., F.L.S., in the Chair.

DONATIONS.

Southern Science Record, from the Publisher.

Report of the Twenty-fifth Anniversary of the Societe Entomologique de Belgique, from the Society.

Journal of the Linnean Society, London, Vol. XIII., No. 65 to 83, from the Society.

PAPERS READ.

DESCRIPTIVE CATALOGUE OF THE FISHES OF AUSTRALIA.

BY WILLIAM MACLEAY, F.L.S., &c.

Part III.

DIVISION X. ACANTH. BLENNIIFORMES.

Body low, subcylindrical or compressed, elongate, rarely oblong. Dorsal fin very long: the spinous portion, if distinct, is very long, as well developed as the soft, or much more; sometimes the whole composed of spines only. Anal fin more or less long; caudal subtruncated or rounded, if present; ventrals thoracic or jugular if present.

FAMILY XXVIII. TRICHONOTIDÆ.

Body elongate, subcylindrical, covered with cycloid scales of moderate size. Eyes directed upwards. Teeth in villiform bands. One long dorsal fin with articulated, not branched rays, and without a distinct spinous portion; anal long; ventrals jugular, with one spine and five rays. Gill-opening very wide; seven branchiostegals. No anal papilla; no air-bladder or pyloric appendages; caudal vertebræ very numerous.

Genus TRICHONOTUS, Bl.

Head depressed, pointed, trunk subcylindrical, tail compressed; cleft of the mouth wide, nearly horizontal, with the lower jaw longest; eyes of moderate size, cycloid; lateral line continuous. One dorsal fin; ventrals jugular with one spine and five rays. Gill-opening very wide, with the gill-membranes scarcely united below the throat; seven branchiostegals. Villiform teeth in the jaws, on the vomer and the palatine bones. Air-bladder and pyloric appendages none.

Coasts of Netherlands India, and North Australia.

544. TRICHONOTUS BLOCHII, Casteln.

Researches on the Fishes of Australia, p. 21-22.

D. 46. A. 36. L. lat. 53.

Height of body over thirteen times in the length without the caudal fin; head five times and a-half. The lower jaw is long and swelled at the extremity receiving within it the upper. The first seven or eight rays of the dorsal fin elongate. Colour orange-yellow without spots; fins yellow. Length six inches.

Gulf of Carpentaria. Port Darwin.

The species which I believed to be *T. setigerus*, Bl., in my paper on the Fishes of Port Darwin (Proc. Linn. Soc. N. S. W., Vol. II., p. 359) is no doubt this species.

FAMILY XXIX. BLENNIIDÆ.

Body elongate, low, more or less cylindrical, naked, or covered with scales which are generally small. One, two, or three dorsal fins, occupying nearly the whole of the back—the spinous portion if distinct, being as much developed as the soft, or more, sometimes entirely composed of spines; anal fin long; ventrals jugular composed of a few rays, sometimes rudimentary or absent. Pseudobranchiæ.

Genus BLENNIUS, Artedi.

Body moderately elongate, naked; snout short. A single dorsal fin without detached portion; ventrals jugular formed by a spine and two rays. Cleft of mouth narrow; a single series of immovable teeth in the jaws, generally a curved tooth behind the series in both jaws or in the lower. Tentacle above the orbit more or less developed, sometimes absent. Gill-opening wide. Branchiostegals six; pseudobranchiæ present. No air-bladder or pyloric appendages.

Coasts and freshwaters of nearly all parts of the world.

545. BLENNIUS TASMANIANUS, Richards.

Gunth., Cat. Fishes III., p. 214.

D. 12/17. A. 2 x 19.

Height of body four times and two-thirds in total length; the length of the head four times. Snout obtuse, with the anterior profile abruptly descending. A curved tooth in each of the jaws. Orbital tentacle well developed, posteriorly fringed; a small tentacle at the nostril. The width of the interorbital space is less than the vertical diameter of the eye; a transverse groove behind the tentacles. The dorsal fin commences in the vertical from the præopercular margin and has flexible spines; a distinct notch between the spinous and soft portions, the latter being separate from the caudal. Brownish-grey, dotted with brown; head and vertical fins blackish.

Tasmania.

546. BLENNIUS VITTIPINNIS, Casteln.

Researches on the Fishes of Australia, p. 25.

D. 12/19. A. 2/20.

Height of body six times in the total length, length of head five times; snout truncate, anterior profile vertical and convex. Teeth very small and similar. Orbital tentacles close together, well developed and fringed externally; the interorbital space concave; the operculum strongly emarginate on its upper part. The first dorsal fin commences over the origin of the pectorals, and is united to the second by a low membrane, and that by a similar membrane to the caudal. Colour (in spirits) greyish-yellow, with faint marmorated brown spots; the fin membranes are obscure, with oblique transverse white lines; the caudal is covered with very small white spots, as is also the anal, which is black edged; pectorals and ventrals yellow. Length five inches.

Dampier's Archipelago. West Coast.

547. Blennius cinereus, Casteln.

Researches on the Fishes of Australia, p. 26.

D. 12/19. A. 21.

Height of body five times and a half in the length, (without caudal), length of head four times and a-half; diameter of eye four and a-half times in the length of the head; anterior profile of head very oblique, almost straight; no curved tooth in the jaws; orbital tentacles long, not divided, pointed; interorbital space very narrow, with a transverse ridge over the eyes in front of the tentacles; head rugose, with a compressed, rounded crest on the posterior part. Caudal fin rounded. Body granular, entirely of a dark blackish-grey; dorsal fins with oblique stripes of black and whitish-grey; anal dark, with three series of white spots; the other fins dark and immaculate.

Queensland (Castelnau). Three and a-half inches in length.

548. Blennius pardalis, Casteln.

Researches on the Fishes of Australia, p. 26.

No tentacles over the eyes. Height of body four times and one-fourth in the length (without caudal), length of head the same; eye very large, one-third of the length of the head, which is rounded and vertical in front; the dorsal fin increases slightly in height posteriorly. Colour brown, grey on the throat; the back on its anterior half, is marked with narrow longitudinal black lines; the body is entirely covered with oblong whitish blotches; the dorsal fin is brown, with transverse whitish lines formed of oval or rounded blotches; a series of minute black blotches near the edge of the fin; caudal rounded, with three transverse series of black dots; anal brown, marked with whitish round blotches; pectorals grey, variegated with brown.

Cape York (Castelnau). Length three inches.

549. BLENNIUS UNICORNIS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 384.

Port Jackson. Length two inches.

550. BLENNIUS CASTANEUS, *n. sp.*

D. 12/13. A. 19.

Height of body about one fourth of the length. Head rounded and nearly vertical in front, the eyes about half their diameter apart; the tentacle above each orbit short, broad, and three or four-pointed; a lateral line consisting of skinny threads extending from the upper angle of the operculum in a curve to the middle of the sides where it seems to terminate. Colour yellowish, with reddish-brown spots along the back and sides, disposed in pairs, and some brownish bars on the head. Fins yellowish, the dorsal with a black spot between the first and second spines, and a few faint brownish marks throughout; anal with a slight blackish margin.

Port Jackson (Macl. Mus.)

Genus PETROSCIRTES, Rüpp.

Body moderately elongate, naked. Snout generally short, or of moderate extent. A single dorsal fin, (sometimes with a semidetached portion), ventrals jugular, composed of two or three rays. Cleft of the mouth narrow; a single series of immovable teeth in the jaws; a strong curved canine tooth behind the others, much longer and stronger in the lower jaw. Head sometimes with tentacles. Gill-opening closed beneath, and reduced to a more or less small fissure above the root of the pectoral. Six branchiostegals; air-bladder and pseudobranchiæ present; pyloric appendages none.

Indian and Australian Seas.

551. PETROSCIRTES VARIABILIS, Cant.

Gunth., Cat. Fishes III., p. 234.

B. 6. D. 28-31. A. 17-21. Vert. 12/23.

The height of the body is one-sixth of the total length, the length of the head one-fifth. The snout is somewhat produced, truncated in front. The canine teeth of the lower jaw very large, those of the upper small. No orbital tentacle. The width of the interorbital space is greater than the diameter of the eye, which is one-fourth of the length of the head. The dorsal fin is not elevated, commences on a line with the posterior margin of the præoperculum, and terminates at a short distance from the root of the caudal. The two inner rays of the ventral fin equal in length. Caudal fin with some of the upper and lower rays prolonged. From the eye to the tail a broad blackish band; dorsal and anal fins spotted and dotted with black; caudal sometimes with a black central spot.

Port Jackson.

552. PETROSCIRTES ANOLIS, Cuv. & Val.

Gunth., Cat. Fishes III., p. 238.

D. 29. A. 22.

Head elevoted into a high crest; snout somewhat elongate; five or six of the middle dorsal rays very elongate, filiform. Greenish, with darker vertical lines; head with some silvery streaks; cheek and base of the pectoral fin with a black spot; fins yellowish, dorsal blackish anteriorly, with numerous fine oblique brown stripes.

Port Jackson.

553. PETROSCIRTES PUNCTATUS, Cuv. & Val.

Gunth., Cat. Fishes III., p. 231.

D. 12/22. A. 23.

Height of body one-sixth of total length, length of head slightly more. Snout short; the upper canine tooth half the size of the lower. The dorsal fin extends to the root of the caudal. Greyish, with three longitudinal series of black spots; the upper along the base of the dorsal fin; the lower along the middle of the body.

Australia (Val.)

554. PETROSCIRTES ELONGATUS, Peters.

Gunth., Cat. Fishes III., p. 233.—Journ. Mus. Godef., Heft XIII., p. 196.

D. 32. A. 24. V. 2.

The height of the body is six times and a-half in the length (without caudal); the length of the head five times and one-third. Snout with a very convex profile, scarcely as long as the diameter of the eye. The width of the interorbital space is one-third of the diameter of the eye. Canine teeth of lower jaw twice the size of those of the upper. The dorsal fin is not elevated, it is emarginate, and begins rather before the vertical from the root of the pectoral. Caudal fin emarginate. Greenish: a white-edged, ocellated spot on the operculum; dorsal and anal fins brown, with white stripes, longitudinal on the former, and oblique on the latter. Male with an ocellated spot between the twenty-third and twenty-fifth dorsal rays.

North Australia (Gunther).

555. PETROSCIRTES SOLORENSIS, Bleek.

Kner Voy. Novara, Ichth., p. 196.—Gunth. Cat. Fishes III., p. 235.

D. 30. A. 20.

Height of body one-sixth, and length of head one fifth of the total length; no orbital tentacles; diameter of eye one-fourth of the length of the head, and twice the length of the snout, and width of the interorbital space. The teeth in both jaws number twenty-eight or thirty; canines strong in both jaws and sometimes larger on one side than on the other. The vaulted forehead descends perpendicularly to the mouth. The dorsal fin begins over the operculum and extends to the tail, which is similarly continuous with the anal fin; the anterior rays of the dorsal fin are prolonged into short filaments and are equal to the height of the body; ventrals long. Colour brownish, the belly lighter, the sides clouded; ventral fins violet, the other fins blackish. Length fifteen lines.

Sydney (Kner).

556. PETROSCIRTES FASCIOLATUS, *n. sp.*

D. 33. A. 26.

Height of body about equal to the length of the head and one-eighth of the total length. Head and snout very convex and obtuse; the diameter of the eye about the length of the snout and twice the width of the interorbital space; cheeks swollen, ventral fins with two rays, the inner one longest; the last few rays of the dorsal and anal fins somewhat enlarged at their apex. Colour reddish-yellow, with numerous reddish-brown spots on the side of the head, and six to eight very fine, oblique, pearly or silvery streaks on the side of the body as far as two-thirds of its length, and about three longitudinal streaks of the same kind on the posterior third. The fins are a little paler than the body and transparent; the dorsal and anal with a narrow black margin with the extreme tips white; a cloudy blotch near the summit of the eighth to tenth dorsal rays, counting from the tail.

Port Jackson (Macl. Mus.) Length two to three inches.

557. Petroscirtes guttatus, *n. sp.*

D. 12/18. A. 21.

Height of body about equal to the length of the head, and one-fifth of the total length. Snout slightly pointed, the profile oblique, rather longer than the diameter of the eye, which is about equal to the interorbital space; a low skinny ridge from between the eyes to the occiput; the latter part of the dorsal fin elevated, as high as the body and extending to the tail; ventral fins two-rayed, the inner much longer than the other. Reddish, with four irregular rows of deep blue small spots along the sides, and a few more minute ones on the thorax; the fins are immaculate; the rays dusky-yellow, the membranes transparent.

Port Jackson (Macl. Mus.) Length two to three inches.

558. Petroscirtes rotundiceps, *n. sp.*

D. 34. A. 24.

Height of body one-seventh, and length of head one-sixth of the total length. Head very round and obtuse above, below and in front. Diameter of eye rather more than the width of the interorbital space, and less than its distance from the extremity of the snout. Some of the rays of the vertical fins have a slight tendency to run into filaments. Colour reddish-yellow, with a broad longitudinal line of reddish-brown blotches along the middle of the body from the eye to the tail, a black spot behind the eye and another above the pectoral fin. The fins yellow, the anterior part of the dorsal, and the base of the entire dorsal faintly spotted with brown.

Port Jackson (Macl. Mus.) Length two and a-half inches.

559. Petroscirtes cristiceps, *n. sp.*

D. 30. A. 21.

Height of body about equal to the length of the head, and one sixth of the total length. Head almost vertical in front and surmounted by a very compressed elevated skinny crest, rounded above, and extending along the top of the head from before the vertical from the orbit to close to the origin of the dorsal fin. The posterior rays of the dorsal fin elevated and filamentose. Colour (in spirits) an obscure bluish-red, with darker red blotches on the side; fins more or less tinged with blackish.

Port Jackson (Macl. Mus.) Length two and a-half inches.

Genus Salarias, Cuv. & Val.

Body moderately elongate, naked; snout short, with the cleft of the mouth transverse; a series of numerous small teeth in the jaws, implanted in the gum and movable; generally a curved canine tooth on each side of the lower jaw. Dorsal fin continuous sometimes divided into two portions by a notch; ventrals jugular, with two, three, or four rays. Tentacle above the orbit more or less developed. Gill-opening wide; pseudobranchiæ. Branchiostegals six. Air-bladder and pyloric appendages absent.

All warm Seas.

560. Salarias fasciatus, Bl.

Gunth., Cat. Fishes III., p. 244.—Journ. Mus. Godef., Heft. XIII., p. 201, pl. 115, fig. H.

D. 12/18-19. A. 19-21.

Height of body one-fifth of the total length, length of head about one-sixth. Anterior profile nearly vertical; no canine teeth; a pair of fringed tentacles above the orbits, another on the nape; crest none. The dorsal fin is not notched, begins in the vertical from the extremity of the operculum, and is continuous with the caudal fin. The anterior anal rays are sometimes semi-detached and elongate. Brown, irregularly variegated, spotted and dotted with yellow and blue; immature specimens with eight brown vertical bands; throat and chest with three yellowish cross-bands, several whitish spots before the root of the pectoral.

Cape Grenville (Chevert Exp.)

561. SALARIAS DUSSUMIERI, Cuv. & Val.

Gunth., Cat. Fishes III., p. 251.
D. 12/20. A. 22.

Height of body one-sixth or one-seventh of the total length. A short fringed tentacle above the orbit and at the nostril. No canine teeth. The dorsal fin deeply notched, extending to the caudal. Brownish, indistinctly marbled with reddish-brown; the rays of the dorsal and caudal fins dotted with brown; anal greyish, with blackish margin. (In life, green, with rose-coloured dots.—Val.)

Port Essington.

562. SALARIAS MELEAGRIS, Cuv. & Val.

Gunth., Cat. Fishes III., p. 256.
D. 12/20. A. 22. Vert. 11/26-17.

The height of the body is contained six times or six times and a-half in the total length; the length of the head five times and a-half. A crest on the head, a fringed tentacle half as high as as the head, above the orbit, another small one at the nostril. No canine teeth; dorsal fin deeply notched, extending on to the caudal; the posterior portion lower than the body, but higher than the anterior portion. Greyish, with pairs of indistinct, brownish, vertical bands, and with round white dots; the dorsal fin with oblique stripes; anal blackish, with white spots.

Tasmania (Cuv. & Val.), Cape York (Gunther), Nepean Island (Chevert Exp.) mistaken for *S. biseriatus*.

563. SALARIAS LINEOLATUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 336, pl. 13, fig. 2.

Darnley Island (Chevert Exp.)

564. SALARIAS GEMINATUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 336, pl. 13, fig. 3.

Torres Straits (Chevert Exp.)

565. SALARIAS IRRORATUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 337, pl. 13, fig 4.

Low Island (Chevert Exp.)

566. SALARIAS FILAMENTOSUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 337, pl. 14, fig. 1.

Cape York (Chevert Exp.)

567. SALARIAS AURIDENS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 338, pl. 14. fig. 2.

Darnley Island (Chevert Exp.)

568. SALARIAS CRISTICEPS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., 338, pl. 14, fig. 3.

Darnley Island (Chevert Exp.)

569. SALARIAS SPALDINGI, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 358, pl. 9, fig. 4.

Port Darwin (Macl. Mus.)

570. SALARIAS CHEVERTI, *n. sp.*

D. 12/20. A. 20.

Height of body about equal to the length of the head, and one-sixth of the total length. Eyes prominent on the upper angle of the head, less than their diameter apart; face perpendicular, gape of mouth wide, a tentacle above the eyes, of about half their diameter in length, and ending in a single filament. The dorsal fin notched to about half its depth, the ventrals with two rays, fleshy and nearly equal in length; pectorals broad, of fourteen simple rays. Colour in spirits, bluish-brown, with the fins yellow, the dorsal and caudal spotted with brown; very pot bellied.

Darnley Island (Chevert Exp.)

Cuvier and Valenciennes have described a species of *Salarias* from New Holland, (*S. Kinyii*, Cuv. & Val., Hist. Poiss., Vol. XI., p. 334.), but it has never since been identified, and there is a doubt as to the correctness of the habitat given by them. Another species, *Salarias biseriatus*, (Kner., Voy. Nov. Fische, page 197, pl. 8, fig. 5), has been mentioned by Dr. Alleyne and myself (Proc. Linn. Soc. N. S. Wales, Vol. I., 336), as having been found at Nepean Island, Torres Straits, during the voyage of the Chevert. I have however, since satisfied myself that it is *S. meleagris*, and that there is no evidence of *S. biseriatus* being ever taken in Australian waters.

Genus LEPIDOBLENNIUS, Steind.

Body scaly; two dorsal fins, the first formed by flexible spines the second by simple rays; pectoral fin much developed, with the lower rays simple. A band of viliform teeth in both jaws, the outer series containing stronger teeth.

Dr. Steindackner formed this genus for the reception of a Fish from Queensland, to which he gave the specific name of *haplodactylus*.

I have never seen his description and cannot therefore include it in this Catalogue. The following species seems to enter this genus.

571. LEPIDOBLENNIUS GEMINATUS, *n. sp.*

D. 17/12. A. 19. L. lat. about 70.

Height of body one-seventh, and length of head one-sixth of the total length. Eyes near the front angle of the head, the space between hollow and narrow, less than half their diameter; gape of mouth rather large, the maxillary reaching to below the middle of the eye; the profile straight and at an angle of 45°; the snout as long as two diameters of the eye; teeth numerous and sharp, in the centre of each jaw there is an exterior row of crowded large ones, directed outwards; gill membranes broadly connected beneath; scales small, none on the head; lateral line straight. The first dorsal fin commences above the præoperculum, is less than half the height of the body, and is joined to the second by a very low membrane; the second dorsal is slightly higher than the first; the caudal is rather long, narrow, and truncate; the anal consists of thick isolated rays, the membranes not, or scarcely joining them; the pectorals long, reaching to the fifth anal ray, with the six lower rays simple; ventrals two-rayed, fleshy, joined at the base. Colour in spirits, yellowish, with a number of rather faint reddish-brown spots and double vertical fasciæ along the body; fins of a more dusky yellow, with a brown spot at the extremity of the first dorsal spine, and another on the membrane between the third and fourth; anal margined with blackish.

Port Jackson (Macl. Mus.)

Genus CLINUS, Cuv.

Body moderately elongate, covered with small scales; snout rather short; a narrow band or sometimes a single series of small teeth in the jaws and on the palate. Dorsal fin long, formed by many spines and a few rays, without a detached anterior portion; anal spines two; ventrals jugular, composed of a small spine hidden in the skin, and two or three rays. Tentacle above the orbit more or less developed. Gill-opening wide; pseudobranchiæ; six branchiostegals; air-bladder and pyloric appendages absent.

Seas of temperate regions.

572. CLINUS DESPICILLATUS, Richards.

Gunth., Cat. Fishes III., p. 271.

D. 3/35/4. A. 2/25. V. 1/3.

Height of body five times and two-thirds in the total length, the length of the head four times and a-half. Snout rather subconical, with the jaws equal. Palatine teeth none, those on the vomer form an angular band, narrowest in the middle. Interorbital space convex, its width equal to the vertical diameter of the eye; a small branched tentacle above the orbit. Scales exceeding small. The three anterior dorsal spines are remote from, but connected with the others; the height of the dorsal fin is about one-third of that of the body; with the spines rather slender, and is contiguous with the caudal. Greyish-brown (in spirits), with bars and spots of deeper brown along the back and sides, vertical fins dusky towards their margins, caudal spotted.

Tasmania. Length four inches.

Genus NEOBLENNIUS, Casteln.

Elongate; one dorsal fin extending over the entire back, almost all spines. Teeth strong, sharp, numerous and curved, larger on the upper jaw, on the vomer and palatines in transverse series. Body almost naked, a few scales embedded in the skin. Caudal fin free; ventrals thoracic, of four rays; eye large; lateral line on the anterior part of the body only; no barbel. (Casteln.)

573. NEOBLENNIUS FASCIATUS, Casteln.

Researches on the Fishes of Australia, p. 28.

D. 30/4. A. 2/24. V. 1/4.

Height of body five times and two-thirds in the total length, length of head over four times; eye three times and a-half in the length of the head; dorsal fin large; caudal pointed; ventrals with the two central rays long and articulated; pectorals large, of thirteen rays; the male organ very large and prominent. Colour (in spirits) of a fleshy-pink, with the head and fins yellow, the body is generally marked by five broad, transverse, faint bands of a darkish colour; fins sometimes speckled with black.

South Australia. Length under three inches.

Genus HETEROCLINUS, Casteln.

Body subelongate; mouth opening upwards; snout without tentacles; ventral fins jugular, formed of one short and two long rays; dorsals two, the first short, the second with numerous spines and three rays; the dorsal, caudal, and anal somewhat continuous; lateral line only marked on the anterior part of the body; gill membranes inflated.

South Australia.

Count Castelnau has omitted to state whether the body is scaly or naked, but from his description of the species given below, I am inclined to think it is without scales.

574. HETEROCLINUS ADELAIDÆ, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 68.

D. 3. 28/3. A. 2/25.

The height of the body is contained a little less than five times in the total length, the length of the head four times and two-thirds; the eye is half the length of the head, and prominent; the head appears truncate in front when the mouth is shut; the cleft of the mouth is oblique; the upper lip embraces the lower jaw. The first dorsal spine is strong and rather elongate, the second dorsal fin terminates with three soft rays which are attached by a membrane to the caudal, the anal fin is similarly attached to the caudal, which is rather long, Four longitudinal grooves on the body. Colour reddish-brown, yellowish-white beneath, with an irregular black, longitudinal band on the sides and some blackish blotches beneath; the dorsal and anal fins are obscure, with some white portions; the ventrals, caudal, and pectorals of a light colour, the last two sprinkled with black; the elongate portion of the first dorsal is red. Length three and a-half inches.

South Australia (Casteln.)

Genus OPHIOCLINUS, Casteln.

Body very elongate, mouth opening upwards; snout with two short filaments; ventral fins jugular, consisting of one short and two long rays; one dorsal fin, all spinous except the last two rays, and continuous with the caudal and anal; scales very minute and imbedded in the skin; teeth short, strong, and numerous; gill membranes inflated.

South Australia.

575. OPHIOCLINUS ANTARCTICUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 69.

D. 63/2. A. 39.

Height of body one-seventh, and length of head one-sixth of the total length; the diameter of the eye is one fourth of the length of the head; mouth very oblique; numerous short, thick, blunt teeth on the jaws and on the vomer and palatine bones; a short, broad, rounded barbel on the snout in front of the eyes, which are large and lateral; scales on the posterior part of the body more distinct; the lateral line only visible behind the gills; there are five longitudinal depressions or grooves on the body; the male organ very prominent. Colour uniform brownish-red, lighter beneath; some minute black spots on the fins, which are rather red; caudal and anal bordered with black. Length five inches.

South Australia (Castelnau).

Genus CRISTICEPS, Cuv. & Val.

Body moderately elongate, covered with small or rudimentary scales. Snout rather short, with the cleft of the mouth of moderate width. A band of small teeth in the jaws; teeth on the vomer. Two dorsal fins; the anterior short, of three spines, the posterior long and spinous, with a few posterior articulated rays. Ventral fins jugular, with one spine and two or three rays.

Head generally with tentacles. Gill-opening wide; six branchiostegals. Pyloric appendages none.

Viviparous Fishes; European, Indian and Australian Coasts and Rivers.

576. CRISTICEPS ANTINECTES, Gunth.

Cristiceps argentatus, var. *antinectes*, Gunth., Cat. Fishes III., p. 272, and note p. 273.

B. 6. D. 3/30/4. A. 2/23. V. 1/2.

The height of the body is contained six times in the total length, the length of the head five times and a-third. The snout is of moderate extent, subconical, with the lower jaw somewhat prominent. Palatine teeth none. The width of the interorbital space is less than the diameter of the eye; a small, simple tentacle above the orbit. Scales exceedingly small. A short detached dorsal fin on the nape of the neck, the spines of which it is formed are slender and rather longer than those of the second dorsal; the latter is not emarginate and is united with the base of the caudal. Brown or yellowish, more or less spotted and marbled with darker; generally a series of whitish or yellowish spots along the sides.

West Australia.

577. CRISTICEPS NASUTUS, Gunth.

Gunth., Cat. Fishes III., p. 273.

D. 3/28/4. A. 2/21. V. 1/3. P. 13. C. 9.

The height of the body is five times and a-half in the total length, the length of the head four times and a-half. The snout is subconical, somewhat longer than the eye, with the jaws equal. The width of the interorbital space is much less than the vertical diameter of the eye. A long fringed tentacle at the nostril, that above the orbit rather shorter. Scales minute. The detached dorsal fin is situated above the operculum, the last dorsal ray is fixed to the tail, but not to the caudal fin. Uniform yellowish, (in spirits).

New South Wales (Gunther).

578. CRISTICEPS ROSEUS, Gunth.

Gunth., Cat. Fishes III., p. 274.

B. 6. D. 3/25-26/4. A. 2/20-21. V. 1/3. P. 12. C. 9. Vert. 14/26.

The height of the body is contained five times in the total length, the length of the head four times and two-fifths. Snout subconical, equal in length to the eye, lower jaw prominent. Teeth on the vomer, none on the palate. The width of the interorbital space is much less than the vertical diameter of the eye. A fringed tentacle at the nostril; that above the orbit well developed with obtuse fringes. Scales rudimentary. The detached dorsal fin situated above the operculum, somewhat higher than the second dorsal, the last ray connected by a membrane with the base of the caudal; the anal fin quite free from it; the inner ventral ray not half the length of the middle one. Yellowish (in spirits), head, body and first dorsal fin marbled with rose-colour; the second dorsal, anal, and pectoral fins with rose-coloured cross-bars.

Freycinet Harbour (Herald).

579. CRISTICEPS FASCIATUS, *n. sp.*

D. 3/30/2. A. 21. V. 2. C. 10.

Height of body about one-fifth of the length. Head rather depressed; the interorbital space rather convex, its width being about equal to the diameter of the eye; tentacles at nostril and over orbit moderate; cleft of mouth wide; scales small, very distinct; lateral line continuous. The detached part of the dorsal fin situated over the operculum and connected by a membrane with the second, the three spines equal in length and of same height as the rest; the last dorsal ray is connected with the tail, the anal is free, pectoral fins rather large, the ventral rays conjoined for half their length. Reddish yellow with six equidistant broad reddish-brown fasciæ, of very irregular outline on the sides of the body, and not quite reaching the back or belly; the fins are immaculate.

Port Jackson (Macl. Mus.)

This species and *Clinus despicillatus.* should be placed in a new genus, intermediate between *Clinus* and *Cristiceps*, and probably the three preceding species, *C. antinectes*, *nasutus*, and *roseus*, ought to accompany them. The compresssed body and elevated first dorsal fin placed on the head, mark the species which should properly belong to *Cristiceps*.

580. CRISTICEPS AUSTRALIS, Cuv. & Val.

Gunth,, Cat. Fishes III., p. 275.

D. 3/27-29/8-5. A. 2/23-25. V. 1/3. Vert. 15/31.

The anterior dorsal fin commences above the posterior margin of the orbit, and is much higher than the posterior; both widely separated from each other. A simple tentacle above the orbit, and a pair of bifurcate ones above the snout.

Rivers of Tasmania. Swan River (Gunther).

The above is all the description given by Dr. Gunther of this species, and I cannot at present refer to Cuv. and Val., tome 9, p. 402, pl. 336, where the fish is described and figured. But Count Castelnau, who carefully studied the genus, gave a decided opinion that the present species is quite distinct from the Port Jackson species long believed to be *C. australis*, and to which he has given the specific name *C. Macleayi*. He suggests however, that his *C. Howittii* may be identical with *australis*, in this I believe he is entirely wrong.

581. Cristiceps Macleayi, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 385.

Port Jackson.

582. Cristiceps Howittii, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 48.

The height of the body is contained about five times in the total length, the length of the head four times and one-third; the diameter of the eye four times and two-thirds in the length of the head. No scales. The lower jaw longer than the upper. The first dorsal fin is placed over the centre of the orbit, its first ray much prolonged; the second dorsal is high, and highest posteriorly, of thirty-five rays; caudal very long and lanceolate; the anal is like the second dorsal, and of twenty-seven rays; the ventrals have two rays one of them bifid. Colour in preserved specimens reddish-brown; the front part of the head is yellow, and there is a broad, black band running obliquely downwards below the orbit. Body marbled and banded with brown, with some ocellated light spots; dorsal and anal fins yellow, with five broad, obscure, transverse bands; the caudal is yellow at its base and brown on its terminal half, the pectorals are yellow with their base brown.

Western Port. Length four and a-half inches.

583. Cristiceps robustus, Gunth.

Gunth., Ann. and Mag., Nat. Hist. 1867, Vol. XX., p. 62.

D. 3/32/7. A. 2/25.

The anterior dorsal fin commences over the hind margin of the præoperculum, and is not higher than the posterior. A fringed tentacle above the orbit, a small one at the nostril. Back with seven dark cross-bands, the first below the anterior dorsal, subocellated.

Melbourne. Five inches long, (Gunther.)

584. CRISTICEPS SPLENDENS, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 66.

D. 3/28/6. A. 2/23. V. 1/4.

Head very convex above and in front. Height of body contained a little over four times in the total length, the length of the head three times and two-thirds, eye five times in the length of the head; snout longer than the diameter of the eye, which is equal to the width of the interorbital space. A long quadridigitate tentacle on the nostril; another, stronger and rather longer, above the orbit, compressed and simple, excepting a small angle anteriorly. Teeth numerous and sharp in the jaws, with in the lower jaw an external series of larger and more conical ones, the teeth on the vomer more blunt. Scales small, round, deciduous; lateral line continuous, formed of a succession of little ridges not contiguous. The first dorsal fin is placed over the orbit, the first spine as high as the body, the second shorter, the third half the length of the first, the second dorsal begins over the end of the operculum, and increases gradually in height to its posterior extremity, the last ray is attached by a membrane to the tail at some distance from the commencement of the caudal fin; the caudal is long, of nine rays, which extend beyond the uniting membrane, the ventrals are formed of two short and two long rays. Colour (in spirits) uniform carmine with the head and fins orange.

South Australia. Length seven inches.

585. CRISTICEPS AURANTIACUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 386.

Port Jackson.

586. CRISTICEPS MULTIFENESTRATUS, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 131, and Vol. II., p. 48 note.

D. 3/30/4. A. 2/23. V. 1/3.

Of rather elongate form. Height of body contained five times and a-half in the total length, length of head four times; diameter of eye four times and five-sixths in the length of the head; a long branched tentacle over the eye, a small simple one on the snout. Scales minute. Lower jaw longest. The first dorsal fin is situated above the end of the præoperculum, the two first spines longer and nearer together than the third, the space between the two dorsals equal to the transverse diameter of the eye; the second dorsal grows a little higher at its posterior extremity, which is rounded, the spines and rays are strong, and the membranes extend to the apex of the rays; the caudal is rounded and formed of nine rays; the anal in form resembles the second dorsal, but the rays extend beyond the connecting membrane; the ventrals have their rays united at the base, the middle one the longest. Of a handsome purple colour, with large, black, rounded blotches, forming a line on the back and on each side, the last being the smallest; between these there are numerous short, irregular, interrupted, white, longitudinal lines. The belly is of a pale and pinkish colour, with large white oval blotches; the head is punctured with red, and has two irregular longitudinal lines on the præoperculum, the second rather oblique; the lips are marbled with pale brown, and on the sides of the head are five or six silvery blotches. The dorsal and anal fins are transparent, covered with purplish-brown opaque lines, forming a sort of trellis work; the rays are brown, marbled with yellow; the rays of the caudal are similar, and that fin is bordered with orange, as is also the soft part of the dorsal; the ventrals are striped yellow and purple; the pectorals are dark; the eye is pink, with an external series of red spots.

Melbourne. Length ten inches.

587. Cristiceps amænus, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 48.

Count Castelnau says *(loc. cit.)* that this species resembles much the preceding species *(C. multifenestratus)* in having numerous transparent spots on the dorsal and anal fins, in a sort of trellis work arrangement; but the height of the body is contained four times and two-thirds in the present species in the length of the body, and the operculum is strongly striated. The general colour is a beautiful orange red.

Melbourne. Length eight inches.

588. CRISTICEPS FORSTERI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 132.

D. 3/29/4. A. 26. V. 1/3.

Head elevated and gibbous. Height of body four times and a-half in the total length, length of head four times and one-third; diameter of eye four times and one-fourth in the length of the head. A single bifid filament over the eye. Lips thick and prominent. The first dorsal fin commences in front of the vertical from the end of the operculum and is elevated, the second dorsal is separated from it by only a small space; the caudal is rounded and formed of nine rays; the rays of the anal increase a little in length towards the posterior part, which is rounded; the ventrals have the external ray short, the others long and connected towards the base. General colour green, with the sides of the head and the anterior part of the lower side of the body ochreous-yellow; lips purple; lower portions of præoperculum carmine; dorsal, caudal, and anal fins green, with the spines and rays purple; ventrals yellow; pectorals purple. There are two rounded white spots between the bases of the ventral and pectoral fins and on the second dorsal there are fenestrated rounded spots between the fourth and fifth rays, the ninth, tenth, and eleventh, the twentieth, and twenty-first, the twenty-sixth and twenty-seventh, and the thirty-second and thirty-third; on the anal there are similar spots between the seventeenth and eighteenth, and the twentieth and twenty-first, and one covering nearly all the twenty-third, twenty-fourth, and twenty-fifth, and between the twenty-fifth and twenty-sixth rays are two additional fenestrated spots, one over the other.

Melbourne. Length six and a-half inches.

589. CRISTICEPS PICTUS, *n. sp.*

D. 3/29/6. A. 25. V. 1/3.

Body very compressed. The first dorsal fin situated over the eye and twice the height of the second dorsal. A simple tentacle over the eye, a branched one on the nostril. No scales. The last two rays of the dorsal fin short, the body part of the tail long, narrow, compressed, becoming more expanded at the junction with the caudal fin; the fin elongate, pointed. Ventrals terminating in one short and two long filaments. Colour (in spirits) red on the body, yellow on the head and thorax, with a brown vertical band beneath the eye. Fins dark purple with minute blackish dots, on the second dorsal are four almost vertical transparent bands, one about the seventh and eighth spines, one about the thirteenth and fourteenth, one about the twentieth and twenty-first, and the fourth on the two last short rays, there is also a round spot of the same character about the twenty-sixth spine, the caudal and anal fins have also some of these transparent spots, but not so large. The pectoral and ventral fins are barred with yellow.

Port Jackson. Length three inches.

590. CRISTICEPS ARGYROPLEURA, Kner.

Kner., Voy. Novara, Fische, p. 199, Tab. 7, fig. 4.

D. 3/34. A. 27. V. 3. P. 10. C. 11.

The first dorsal fin situated over the anterior part of the eye, higher than the body, and attached by a low membrane to the second. Caudal fin elongate. Silvery lines under the eye and at the base of the pectorals, and a series of silvery spots on the sides.

Port Jackson (Kner). Two inches long.

591. CRISTICEPS PALLIDUS, *n. sp.*

D. 3/29/6. A. 26. V. 3. P. 10.

Body compressed, height one-fifth of total length. The first dorsal fin over the middle of the eye, and scarcely higher than the last dorsal rays, which are longer than the first spines of the second dorsal. Head rather depressed, flat between the eyes, which space is less than the diameter of the orbit. Snout much shorter than eye; cleft of mouth oblique; scales very small; lateral line marked with distant, elongate scales; tail elongate. Colour uniform pale reddish-yellow; fins very pale yellow, and immaculate.

King George's Sound (Macl. Mus.)

Genus TRIPTERYGIUM, Risso.

Body not very elongate, covered with rather small or with scales of moderate size. Snout of moderate extent. Jaws with a band of villiform teeth; teeth on the palate. Three dorsal fins, the two anterior spinous, the middle one longest. Ventrals jugular with two soft rays. Six branchiostegals. Pseudobranchiæ.

European, New Zealand and Australian Coasts and Rivers.

592. TRIPTERYGIUM MARMORATUM, Macl.

Proc. Linn. Soc. N.S. Wales, Vol III., p. 34, pl. 3, fig. 2.

King George's Sound (Macl. Mus.)

593. TRIPTERYGIUM ATRIGULARE, Gunth.

Journal Mus., Godef., Heft. IV., p. 91.

D. 3/12/8. A. 14. L. lat. 33.

The height of the body is less than the length of the head, which is two-sevenths of the length of the body without the caudal fin. Eyes large, more than one-third of the length of the head and longer than the snout. Scales with toothed edges. Lateral line distinct to the end of the second dorsal fin. Head without scales. The pectoral fins reach to the vertical from behind the termination of the second dorsal. The body is of a reddish-brown, without markings; the underside of the head and the base of the pectorals are black; the peduncle of the tail above and below with a small blackish spot.

Bowen (Gunther).

Genus STENOPHUS, Castelnau.

Of elongate form. No ventral fins. Dorsal fin entirely spinous united by a membrane with the caudal and anal. Scales small; several lateral lines; gill-openings united below the throat. Teeth numerous, rather compressed and curved.

North Australia.

594. STENOPHUS MARMORATUS, Casteln.

Researches on the Fishes of Australia, p. 27.

Height of body contained ten times and a-half in the length, without the caudal fin; length of head five times and one-third; lower jaw rather in advance of the upper; aperture of mouth extending below the anterior edge of the eye; upper part of head naked; præoperculum scaly; a longitudinal ridge on the the operculum ending in a point, the portion above this ridge is scaly, below, naked; a short lateral line above the point of the operculum formed of small granulations.

Gulf of Carpentaria (Castelnau).

595. STENOPHUS OBSCURUS, Casteln.

Researches on the Fishes of Australia, p. 27.

Height of the body contained nine times and two-thirds in the length without the caudal fin, length of the head about six times; lower jaw considerably longer than the upper; teeth numerous, conical, rounded at their extremity. A few very small scales apart from one another on the posterior part of the head; operculum scaly; body covered with rather small scales; lateral line emitting an abbreviated upper branch behind the operculum. Colour obscure brown on the upper parts, dark yellow below.

Gulf of Carpentaria (Castelnau). Length eleven inches.

Genus NEOGUNELLUS, Casteln.

Form elongate, rather compressed. Scales very small and rudimentary. Vertical fins long, united to the caudal; dorsal entirely spinous; ventrals long, filamentary, of two rays. Teeth numerous, thick, conical, the outer ones larger. Head small.

One species from South Australia.

596. NEOGUNELLUS SULCATUS, Castelnau.

Researches on the Fishes of Australia, p. 27.

D. 67. A. 43.

Height of body about eight times in the total length, length of head six times and two thirds; diameter of eye five times and one-third in the length of the head. The dorsal spines are very feeble, but the twenty-sixth and thirty-first are much stronger; caudal fin pointed, the middle rays being much the longest; anal long and formed of flexible spines. The male has the sexual organ conspicuous, and a kind of thoracic corselet as in some of the *Scombridæ*. Colour (in spirits) reddish-brown without spots the vertical fins are black, and the lower part of the head rather livid.

South Australia. Length about five inches.

Genus Sticharium, Gunth.

Body elongate, compressed, naked or with scarcely a trace of scales. Anterior part of lateral line distinct, near the dorsal profile. Snout short; small teeth in the jaws, without canines; palate apparently toothless. Dorsal fin long, formed by pungent spines only; ventrals jugular with two rays; caudal distinct. Gill-openings rather wide, the gill-membranes broadly united below the throat, and quite free from the isthmus.

597. Sticharium dorsale, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX., p. 63.

D. 41. A. 2/36.

The height of the body is two-thirds of the length of the head, which is contained six times and a-half in the total length, (without caudal). Cleft of mouth extending to below the middle of the eye; lower jaw slightly prominent. Length of the trunk not much exceeding that of the head. Dorsal and anal fins very low, terminating in a low fold of the skin, which is continued to the caudal. Ventrals much longer than the pectorals. A broad white band runs along the upper surface of the head and back. Sides finely marbled with brown, the markings radiating from the eye on the head.

Port Jackson? (Gunth.)

Genus Notograptus, Gunth.

Body elongate, compressed, covered with minute scales. Lateral line complete, running along the base of the dorsal fin. Head longish and rather depressed; snout of moderate extent, somewhat pointed; cleft of the mouth wide; a short flat barbel at the symphysis of the lower jaw. Bands of villiform teeth in the jaws and palatine bones, none on the vomer; tongue narrow, long, free. Vertical fins confluent; dorsal and anal with numerous spines, the posterior becoming gradually stiffer and more pungent than the anterior. Ventrals jugular, close together, reduced to a single bifid ray. The gill-membrane is attached to the isthmus before the ventrals. Pseudobranchiæ well developed. Intestinal tract short, simple, without pyloric appendages. Air-bladder none.

598. NOTOGRAPTUS GUTTATUS, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX., p. 64.

D. 69. C. 11. A. 43.

The height of the body is one-twelfth of the length without caudal, length of the head two-fifteenths. Eye small; barbel shorter than the ventrals, which are about twice as long as the eye. Reddish or brown, dorsal fin, upper and lateral parts with numerous blue dots, those on the head largest. Young with the spots on the body, indistinct and of a brown colour.

Cape York. Port Darwin (Macl. Mus.)

Genus PATÆCUS, Richardson.

Body oblong, anteriorly elevated, very compressed, and tapering to the tail. Forehead projecting beyond the snout; minute teeth in the jaws and on the vomer, none on the palatine bones. Mouth small, no scales. Dorsal fin long, some of the anterior spines strong, continuous with the candal; ventrals none. Gill-openings wide; no pseudobranchiæ; branchiostegals six. No cleft behind the fourth gill.

Australia.

599. PATÆCUS FRONTO, Richards.

Ichth. Voy. Erebus and Terror, p. 20, pl. 13.—Gunth., Cat. III., p. 292.

B. 6. D. 24/16. A. 11/5. P. 8.

Head very high and compressed, front of the head more than perpendicular. Dorsal fin beginning before the eyes, the first spine short and stout, the next few stout and long, equalling the height of the body behind the operculum. Pectoral fins longer than the head, reaching to the sixth anal spine. Colour uniform brownish red.

West Australia.

600. PATÆCUS MACULATUS, Gunth.

Cat. Fishes III., 292.—Castelnau, Proc. Linn. Soc. N.S.W., Vol. II., p. 231.

D. 31. A. 12. P. 8.

The pectoral fin shorter than the head. Olive, black-spotted.

Dr. Gunther's description of this Fish cannot be accurate, or its resemblance to *fronto* must be very slight. It will probably be found that for D. 31. we should read D. 41. Count Castelnau's description in the Third Volume of our transactions will assist in the identification of the species, which is from South Australia.

601. PATÆCUS WATERHOUSEI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 244.

The pectoral fin rather longer than the head, only extending to the anus; dorsal with thirty spines, the first sensibly longer than the others, and with its membrane deeply emarginated; caudal with the fifth, sixth and seventh rays considerably prolonged; anal with ten rays, the posterior ones elongated and pointed; mouth surrounded by several series of bifid papillæ. Brown, marbled with white.

South Australia.

602. PATÆCUS SUBOCELLATUS, Gunth.

Proc. Zool. Soc., London, 1871, p. 665, pl. 64.

D. 39. A. 15. C. 10. P. 8.

The first dorsal spine very short, the second is the longest, as long as the head. The interradial membrane of the anal fin is so narrow, that the fin cannot be erected, and the last ray is attached to the lower edge of the tail. The three upper pectoral rays much shorter than the fourth. No orbital rim. Skin entirely smooth, without tubercles or tentacles. Four ocellated spots, about as large as the eye,—the anterior equidistant from each other—along the upper half of the body. Fins indistinctly reticulated with brown, some of the reticulations being distinct rings.

South Australia.

Division XI. ACANTH. MUGILIFORMES.

Two dorsal fins more or less remote from each other, the anterior either short, like the posterior, or composed of feeble spines; ventral fins well developed, 1/5, abdominal.

Family XXX. SPHYRÆNIDÆ.

Body elongate, subcylindrical, covered with small cycloid scales; lateral line continuous. Cleft of mouth wide, armed with strong teeth. Eye lateral, of moderate size. Seven branchiostegals; pseudobranchiæ and air-bladder present. Two dorsal fins remote from each other; ventrals abdominal.

Genus Sphyræna, Artedi.

Body more or less elongate, covered with small, smooth scales; cleft of the mouth wide. Large trenchant teeth in the jaws and on the palatine bones, none on the vomer. Two short dorsal fins situated at a great distance from each other, the ventrals opposite the anterior dorsal, and the anal opposite and of the length of the posterior. Seven branchiostegals; air-bladder large, bifurcate posteriorly. Pyloric appendages in great number.

Nearly all tropical and temperate seas.

603. Sphyræna Novæ-Hollandiæ, Gunth.

Gunth., Cat. Fishes II., p. 335.

D. 5. 1/9. A. 1/10. L. lat. 135.

Very slender and elongate; height of body one-eleventh of the total length, the length of the head one-fourth; the diameter of the eye one-seventh of the length of the head. Operculum rounded posteriorly. The length of the pectoral fin is one-twelfth of the total, and more than that of the ventral, the spine of the latter is not much shorter than the rays. The origin of the first dorsal fin is behind the vertical from the root of the ventral, and before the middle of the length of the fish, without caudal. The space between the dorsals is one-fourth of the total length. Colour above greenish, beneath silvery.

Port Phillip. Port Jackson, young specimens.

604. Sphyræna Forsteri, Cuv. & Val.

Gunth., Cat. Fishes II., p. 337.—Journ. Mus. Godef., Heft. XIII., p. 211, pl. 119, fig. A.

D. 5. 1/9. A. 1/9. L. lat. 110. L. trans. 30.

The height of the body is one-ninth of the total length, the length of the head nearly one-fourth; the diameter of the eye is nearly five times in the length of the head; the maxillary reaches to beneath the anterior edge of the orbit. Operculum with a single flexible point. Lower jaw with a conical tubercle in front, and with about nineteen stronger posterior teeth. The length of the pectoral fin is about one-eleventh of the total, and more than that of the ventrals. The root of the ventral fins falls below the posterior half of the pectorals. The first dorsal commences just above the extremity of the pectoral, but behind the root of the ventral. Above uniform greenish; beneath silvery. Dorsal and caudal fins violet, the others yellowish.

South Coast, New Guinea (Chevert Exp.)

605. Sphyræna Commersonii, Cuv. & Val.

Gunth., Cat. Fishes II., p. 338.—Castelnau, Proc. Zool. Soc., Vict., II., p. 102.

D. 5. 1/9. A. 1/9. L. lat. 80-90.

The height of the body is about one-ninth of the total length, the length of the head about one-fourth; the diameter of the eye one-fifth of the length of the head; the maxillary bone reaches to the anterior edge of the orbit. Operculum with a flexible point. Lower jaw with a conical tubercle in front, and about fifteen to eighteen longer posterior teeth. The length of the pectoral fin is one-tenth or one-eleventh of the total, and more than that of the ventrals. The first dorsal fin commences just above the point of the pectorals, but behind the insertion of the ventrals. Above uniform bluish-green, beneath silvery; dorsal, caudal, and anal fins violet.

Knob Island, North Australia (Castelnau).

606. SPHYRÆNA OBTUSATA, Cuv. & Val.

Gunth., Cat. Fishes II., p. 339.—Journ. Mus. Godef., Heft. XIII., p. 212, pl. 119, fig. B.

D. 5. 1/9. A. 1/9. L. lat. 90.

The height of the body is contained seven or eight times in the total length, the length of the head three times and a-half; the diameter of the eye is more than a-fifth of the length of the head. Opercles scaly. Lower jaw without or with a very slight fleshy appendage in front. The first dorsal and the ventral fins commence in the vertical from the extremity of the pectorals. Præoperculum not rounded, with the angle slightly produced. Above uniform greenish lead-coloured, beneath silvery. Fins yellow.

Port Jackson.

This is the "*Pike*" of the Sydney Fishermen. I have given Dr. Gunther's description, there but may be are two species, as it is scarcely in accordance with what I have observed. In all the Sydney specimens I have seen, the ventral fins commence opposite the last fourth of the pectorals. and the first dorsal over the last fourth of the ventrals. A dark band runs from the snout to the tail below the lateral line; the fins are all of a deep yellow colour with the outer rays black; there is also a black blotch under and at the root of the pectorals. L. lat. 85.

607. SPHYRÆNA LANGSAR, Bleek.

Gunth., Cat. Fishes II., p. 340.—Macl., Linn. Soc. N. S. W., II., p. 359.

D. 5. 1/9-10. A. 10-11. L. lat. 80.

The height of the body is contained nine times in the total length; the length of the head three times and three-quarters; the diameter of the eye is one-fifth of the length of the head. Operculum without spine; præoperculum obliquely emarginate, with an acute membranaceous angle. The maxillary bone does not reach to the level of the eye; lower jaw with a conical point but without appendage. The first dorsal fin commences just above the extremity of the pectoral, but behind the root of the ventrals. The distance between the dorsal fins is twice the length of the second dorsal. Above uniform greenish, beneath silvery; fins scarcely coloured.

Port Darwin, young specimens, (Macl. Mus.)

Genus LANIOPERCA, Gunth.

Body compressed, elongate, covered with deciduous scales of moderate size. Head with the snout produced and pointed, entirely covered with small scales. Cleft of the mouth wide, with the lower jaw projecting. Jaws, vomer, and palatine bones with narrow bands of villiform teeth, and with an outer series of stronger teeth. A pair of very strong canine teeth in the upper jaw. Tongue smooth. Eye of moderate size. Seven branchiostegals; pseudobranchiæ. Two dorsal fins, the first short; the anal with two spines. No denticulations on the cranial bones, the opercular margins being very thin and membranaceous.

608. LANIOPERCA MORDAX, Gunth.

Ann. and Mag., Nat. Hist. 1872, Vol. X. p. 183.

Dinolestes Mulleri, Klunz., Arch. f. Nat., 1872, p. 29, tab. 3.

Neosphyræna multiradiata, Casteln., Proc. Zool. Soc., Vict. I., p. 96.

D. 5. 1/19. A. 2/25. L. lat. 66.

The height of the body is contained five times in the length (without caudal); the length of the head three times and one-fourth. The eye is nearer to the end of the opercle than to that of the snout, its diameter being two-elevenths of the length of the head, and equal to the width of the interorbital space. The maxillary does not quite reach the vertical from the front margin of the eye, which is immediately below the upper profile. The teeth of the outer series in the upper jaw are subequal in size, and much smaller than those in the lower, the four or five posterior of which are enlarged, distant, and canine like. Posterior margin of the præoperculum deeply emarginate. Pectoral fin not quite half as long as the head, the upper rays the longest; root of the ventrals at a very short distance behind that of the pectorals. Dorsal spines very feeble. Caudal forked. Coloration silvery-grey, fins yellowish, sometimes a black spot on the upper lobe of the tail. Length twelve to eighteen inches.

Tasmania. Port Phillip. Port Jackson.

FAMILY XXXI. ATHERINIDÆ.

Body more or less elongate, subcylindrical, covered with scales of moderate size; lateral line indistinct. Cleft of the mouth of moderate width, with the dentition feeble. Eye lateral, well developed. Gill-opening wide; four gills; pseudobranchiæ; five or six branchiostegals. Two dorsal fins; the spines of the first feeble, the second of moderate length; anal like the second dorsal or rather longer. Ventral fins abdominal, with one spine and five rays. Vertebræ very numerous in the caudal and abdominal portions.

Genus ATHERINA, Artedi.

Body subcylindrical or slightly compressed; snout more or less obtuse, with the cleft of the mouth straight, oblique, extending to or beyond the anterior margin of the eye. Teeth minute, those on the palate sometimes indistinct. Scales cycloid, of moderate size. Ventral fins some distance behind the pectorals. Air-bladder present. No pyloric appendages. A silvery band along the side.

Nearly all temperate and tropical seas entering rivers.

609. ATHERINA HEPSETOIDES, Richards.

Ann. and Mag. Nat. Hist., 1843, XI., p. 187.—Gunth., Cat. Fishes III., p. 397.

D. 9. 1/11. A. 1/14. P. 15. Vert. 48.

The anterior dorsal fin is between the base of the ventral and the vent. The height of the body is one-eighth of the total length, the length of the head nearly one-sixth; the diameter of the eye is one-third of the length of the head, and a little more than the length of snout. Cleft of mouth oblique; teeth minute.

Port Arthur, Tasmania (Richardson).

610. ATHERINA PRESBYTEROIDES, Richards.

Ann. and Mag. Nat. Hist. 1843, XI., p. 179.—Gunth., Cat. III., p. 397.

D. 9/10-11. A. 1/12. P. 11. Vert. 46.

The first dorsal fin stands wholly anterior to the anus, commencing just perceptibly behind the ventrals. The height of the body equals the length of the head and is one-fifth of the total. The diameter of the eye is one-third of the length of the head, and more than that of the snout. Teeth distinct. There are two series of scales above the silvery band.

Port Arthur, Tasmania (Richardson).

611. ATHERINA PINGUIS, Lacep.

Gunth., Cat. Fishes III., p. 399.
"*Hardyhead*" of Sydney Fishermen.

D. 6. 1/10. A. 1/14-15. L. lat. 42-45. L. transv. 7. Vert. 20/23.

The origin of the spinous dorsal is at some distance behind the vertical from the vent, and its distance from the operculum is equal to one and a-third of the length of the head. The height of the body is five times and two-thirds in the total length, the length of the head four times and two-thirds. The diameter of the eye is two-fifths of the length of the head, equal to the width of the interorbital space, and much longer than the snout. Snout short, obtuse, with the cleft of the mouth very oblique, and the upper jaw overlapping the lower; the maxillary extends beyond the vertical from the anterior margin of the eye. Teeth distinct in the jaws, on the vomer and the palatine bones. The silvery streak occupies the third series of scales and the adjoining quarter of the fourth. The membrane in which the dorsal scales are rooted, is minutely dotted with white; a blackish blotch on the posterior extremity of the pectoral; iris with a blackish spot superiorly.

Port Jackson. South Australia.

612. ATHERINA LACUNOSA, Block.

Gunth., Cat. Fishes III., p. 400.—Proc. Linn. Soc. N.S. Wales, Vol. I., p. 340.

D. 6. 1/9. A. 1/13-15. L. lat. 41.

The spinous dorsal is nearer to the anal fin than to the ventrals. The height of the body is two-thirteenths in the total length, the length of the head two-ninths. Snout much shorter than the eye, the maxillary extending to below the pupil; teeth in the jaws, less distinct than on the vomer and palatine bones. Margin of the scales denticulated. No black spot on the pectoral fin.

Cape York (Chevert Exp.)

613. ATHERINA ENDRACHTENSIS, Quoy & Gaim.

Gunth., Cat. Fishes III., p. 401.

D. 5. 1/8. A. 1/10. L. transv. 7. Vert. 36.

Height of body one-sixth of total length; the width of the head between the eyes is two-thirds of its length; snout half as long as the eye; pectoral fin long, somewhat less than one-fourth of total length. A series of black dots along the middle of the silvery band; two other series along the side of the back, and a single series on the belly.

South West Coast of New Holland, (Val.)

614. ATHERINA MICROSTOMA, Gunth.

Gunth., Cat. III., p. 401.

D. 6. 1/10. A. 1/12. P. 12. L. lat. 40. L. tr. 8.

The whole of the spinous dorsal is above the ventral fin; the height of the body is six times and a-half in the total length, the length of the head five times; the diameter of the eye is one-third of the length of the head, equal to the width of the inter-orbital space, and more than the extent of the snout, which is short and slightly pointed. The cleft of the mouth is very oblique with the jaws equal anteriorly; the mouth is rather small, the maxillary not extending to the anterior margin of the eye. Teeth conspicuous, on jaws and vomer. The silvery band occupies half of the fourth and fifth series of scales, and it has two or three rows of dots running along its whole length.

Tasmania.

615. ATHERINA PAUCIRADIATA, Gunth.

Gunth., Cat. Fishes III., p. 491.

D. 5-6. 1/6. A. 1/7. L. lat. 25. L. transv. 6.

The spinous dorsal fin is above the posterior half of the ventral. The height of the body is one-fifth of the total length, the length of the head one-fourth; the diameter of the eye is three times and two-thirds in the length of the head, equal to the extent of the snout, but much less than the width of the interorbital space. Mouth very protractile, oblique, with the jaws equal anteriorly; the maxillary extends to below the anterior margin of the eye. Minute teeth in the jaws. The silvery band is narrow, occupying the central half of the third series of scales.

North-west Coast of Australia.

616. ATHERINA STERCUS-MUSCARUM, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX., p. 64.

D. 7. 1/8. A. 1/9. L. lat. 33. L. transv. 8 or 9.

Origin of the spinous dorsal behind the root of the ventrals. The height of the body is contained four times and two-thirds in the total length (without caudal), length of the head thrice and two-thirds. Snout not much shorter than the eye. Dorsal spines feeble. Pectoral fin short, extending to the root of the ventral. A black band from the snout through the eye to the root of the pectoral. A silvery band along the fourth series of scales. Each scale with a black dot at the base.

Cape York. Length two inches.

617. ATHERINA SIGNATA, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX., p. 64.

Pseudomugil signifer, Kner., Voy. Novara, p. 275, pl. 13.

D. 3. 1/6. A. 1/10. L. lat. 28. L. transv. 7.

Origin of the first dorsal fin behind the root of the ventrals. The height of the body is thrice and three-fourths in the total length (without caudal), length of the head four times. Snout obtuse, shorter than the eye. The three dorsal spines are united into a narrow lobe, terminating in a long filament. Anterior dorsal and anal rays, lobes of the caudal fin, and the ventrals prolonged into long filaments. The middle of the sides silvery; the prolonged parts of the fins deep black; ventrals white.

Cape York. Length one and a-half inch.

Genus ATHERINICHTHYS, Bleek.

Characters of *Atherina*, but with the snout produced and the cleft of the mouth not reaching the orbit.

618. ATHERINICHTHYS JACKSONIANA, Quoy & Gaim.

Gunth., Cat. Fishes III., p. 402.

D. 8. 1/11. A. 1/18.

The spinous dorsal is above the interspace between the ventral fins and the anal. The height of the body is one-ninth of the total length.

Port Jackson. Tasmania (Gunther).

619. ATHERINICHTHYS DUBOULAYI, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 143.

Richmond River.

620. ATHERINICHTHYS MODESTA. Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 136.

D. 6. 1/9. A. 1/10. L. lat. 40.

Height of body five times and a-half in the total length, length of head four times and a-quarter; diameter of eye three times in the length of the head, and considerably more than the length of the snout; mouth protractile; scales large. The distance from the origin of the first dorsal fin to the snout is equal to that from the termination of the same fin to the origin of the caudal; from the origin of the first dorsal to that of the second, the distance is equal to that between the origin of the second dorsal and the base of the caudal; the height of the first dorsal is equal to the distance from the point of the snout to the centre of the eye; the caudal fin is strongly bilobed; the anal is inserted very slightly in advance of the first dorsal; the pectorals are longer than the height of the dorsal, and are composed of twelve rays. Colour light greyish-green, with the edges of the scales on the back of a dark colour. A broad silvery band on the sides; dorsal, caudal, and pectoral fins yellow; anal and ventrals white; eye silvery.

Hobson's Bay and lower Yarra. Length two to three inches.

621. ATHERINICHTHYS EDELENSIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 134.

More elongate than *A. modesta,* the height being about one-seventh in the total length, the length of the head three times and three-quarters. The first dorsal fin is inserted at an equal distance from the snout and the base of the caudal. In all else the description of *A. modesta* applies to this species.

Western Australia.

622. ATHERINICHTHYS PICTA, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 137.

D. 8/10. A. 11. C. 17. L. lat. 44.

Height of body six and a-half times in the total length, the length of the head four times; the diameter of the eye three times and one-fifth in the length of the head. Body elongate; scales large, snout considerably shorter than the diameter of the eye. The two dorsal fins are placed as in *A. modesta;* the anal a little in front of the dorsal; the ventrals under the first dorsal; caudal long, emarginate. Of a pretty light green, with the lower parts of the body white and silvery, a broad longitudinal red band on each side; fins diaphanous; caudal yellow; eye silvery; a few very minute black points on the sides of the head.

Capt. Tinnot's Dock, Lower Yarra. Under two inches.

623. ATHERINICHTHYS CEPHALOTES, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 137.

D. 7. 1/8. A. 1/12. L. lat. 42.

Height of body seven times and one-third in the total length, the length of the head three times and two-thirds. Eye very large, its diameter three times and one-third in the length of the head. Lower jaw longer than upper, the teeth in the lower rather longer, in both, curved and pointed. Mouth large, but the cleft does not reach the orbit. The first dorsal fin commences a little nearer to the snout than to the base of the tail, its first spine is considerably shorter than the others; the anal is inserted below the second dorsal, but is much longer; the ventrals are inserted a little in advance of the first dorsal; the caudal is forked. Colour light green, with the belly white, a broad silvery band on the side, a large round, black spot, (sometimes indistinct) on the base of the caudal fin. The head has an olive tint, the dorsals are greyish, the caudal and pectorals yellow, anal and ventrals white.

Hobson's Bay. Length six inches.

624. ATHERINICHTHYS OBSCURA, Casteln.

Researches on the Fishes of Australia, p. 31.

D. 7. 1/11. A. 1/16.

The cleft of the mouth far in advance of the anterior margin of the orbit; body very elongate, its height being eight times and a-half in the total length. Eye large, about one-third of the length of the head, and equal to the length of the snout. The first dorsal fin is inserted a little behind the base of the ventrals, caudal very deeply forked. Colour blackish, the width of the silvery band varies from one to three series of scales in different specimens.

Swan River. Length one and a-half inch.

Genus Nematocentris, Peters.

Distinguished from *Atherinichthys*, by the presence of vomerine and palatine teeth, absence of a lateral line, pungent first spine of the two dorsal fins, the other spines of the first dorsal being flexible.

925. Nematocentris nigrans, Richards.

Atherina nigrans, Richards., Ann. and Mag., Nat. Hist., 1843, XI., p. 180. *Nematocentris splendida*, Peters, Monatsb. Ak. Wiss., Berlin, 1866.

D. 1/4/1/12. A. 1/18. L. lat. 35. L. transv. 10.

The height of the body is one-fourth of the total length, the length of the head one-fifth; the diameter of the eye equals the length of the snout (in mature specimens) and is nearly one-fourth of the length of the head. The first dorsal spine pungent, the others filiform; the last dorsal rays produced, reaching to the base of the caudal. The ventrals end in a thread-like tip which overlaps the commencement of the anal. The dorsal and anal fins commence in nearly the same vertical. An even black stripe replaces the usual silvery band and is continued forward over the gill-cover, upper half of the eye, and sides of the snout; it occupies the fifth series of scales and the adjoining parts of the fourth and sixth. Length three inches.

Freshwaters of Port Essington, Severn River, Fitzroy, Clarence and Brisbane Rivers.

626. Nematocentris pusilla, Casteln.

Zantecla pusilla, Casteln., Proc. Zool. Soc., Victoria, Vol. II., p. 88.

D. 1/5/1/9. A. 1/17. L. lat. 35. L. transv. 10.

Height of body three times and a-third in the total length, diameter of eye twice and one-third in the length of the head; head attenuated and pointed; lower jaw longer and thicker than the upper. The first dorsal fin is inserted at an equal distance from the snout and the base of the caudal, the second is separated from the first by a space equal to the diameter of the eye, its spine is long and curved as is also that of the anal fin, the last rays of both fins prolonged. Colour silvery, with the back of a light lilac, a broad silvery band bordered with black on each side, the dorsal rays and extremities of the anal blackish.

Port Darwin. Length two inches.

Genus ATHERINOSOMA, Casteln.

Form and characters of *Atherina*, but with numerous large, hooked teeth in the jaws, and with the vomer, palatine bones, tongue, and all the upper surface of the mouth strongly toothed.

For the reception of this and the following genus Count Castelnau suggested a new Family, to be named *Neoatherinidæ*, the dentition being so very much stronger than in the *Atherinidæ* proper.

627. ATHERINOSOMA VORAX, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 138.

D. 6. 1/9. A. 1/8. L. lat. 36.

Height of body seven times in the total length, length of head four times and a-half, diameter of eye three times and one-third in the length of the head. Lower jaw longer than upper; snout considerably shorter than the diameter of the eye. The first dorsal fin rather rounded, its posterior membrane attached to the back; it is inserted nearer to the muzzle than to the root of the caudal; caudal forked; ventrals rather large, situated a little in front of the first dorsal. Head scaly to between the eyes. Colour light green, beneath white and silvery, a broad brilliant band along the side, dorsal and caudal fins yellow; anal and ventrals white.

Cape Schanck. Length three inches.

Genus NEOATHERINA, Casteln.

Form compressed, subelongate; snout rather projecting. Teeth strong, on the upper jaw in two series, those in front long and blunt, those on the sides triangular; in the lower jaw numerous and pavement like, with an external series of larger and conical teeth; several transverse lines of strong teeth on the palate. Scales large, ciliated. Two dorsal fins, each with one strong spine.

628. NEOATHERINA AUSTRALIS, Casteln.

Researches on the Fishes of Australia, p. 32.

D. 1/4/1/11. A. 1/17. L. lat. 28.

Subelongate, convex on the anterior part of the back; height of body four times in the length, length of head four times and a-third, the diameter of the eye three times and a-half in the length of the head, and equal to the length of the snout; anterior teeth directed forwards; cheeks and opercles covered with large scales; mouth rather wide, resembling that of a *Clupea*. The four soft rays of the first dorsal are much longer than the spine, and higher than the second dorsal; ventrals with six long rays; pectorals small, of twelve rays. Colour (in dried specimens) purplish above and whitish below, with a bluish longitudinal band on the side.

Swan River. Length four inches.

FAMILY XXXII. MUGILIDÆ.

Body more or less oblong and compressed, covered with cycloid scales of moderate size; lateral line none. Cleft of the mouth narrow, or of moderate width, without, or with feeble teeth. Eye lateral, well developed. Gill-openings wide; four gills; pseudobranchiæ; five or six branchiostegals. Two short dorsal fins, the anterior with four stiff spines, anal longer than second dorsal. Ventrals 1/5, abdominal, suspended from the elongate coracoid bone. Vert. 24.

Coasts and freshwaters of all temperate and tropical regions.

Genus Mugil, Artedi.

See Macl. Mon. Mug., Proc. Linn. Soc. N.S.W., Vol. IV., p. 412.

629. Mugil grandis, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 386.

From Brisbane to Gipps Land Lakes.

630. Mugil dobula, Gunth.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 414.

Rivers of East Coast; Hawkesbury River.

631. Mugil cephalotus, Cuv. & Val.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 416.

Port Jackson. (Kner.)

632. Mugil argenteus, Gunth.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 417.

Rockhampton (Gunther).

633. Mugil occidentalis, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 418.

West Australia, rivers.

634. Mugil waigiensis, Quoy. & Gaim.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 420.

North Coast. Cape York.

635. Mugil Peronii, Cuv. & Val.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 421.

Western Port. Port Jackson.

636. Mugil compressus, Gunth.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 421.

New South Wales rivers.

637. Mugil Pettardi, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 422.

Richmond River.

638. Mugil delicatus, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 422.

Cape York, (Chevert Exp.)

639. Mugil ventricosus, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 423.

Nicol Bay, West Australia.

640. Mugil crenidens, Kner.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 424.

Sydney, (Kner.)

Genus Agonostoma, Gunth.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 424.

641. Agonostoma diemensis, Richardson.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 425.

Port Phillip, Tasmania, and West Australia.

642. Agonostoma lacustris, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 425.

Gipps Land Lakes.

Genus Myxus, Gunth.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 426.

643. MYXUS ELONGATUS, Gunth.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 426.

Hobson's Bay. Port Jackson.

DIVISION XII. ACANTH. GASTEROSTEIFORMES.

Spinous dorsal fin composed of isolated spines if present; the ventrals have an abdominal position in consequence of the prolongation of the pubic bones, which are attached to the humeral arch.

FAMILY XXXIII. FISTULARIDÆ.

Of greatly elongated form; the anterior bones of the skull much produced, forming a long tube terminating in a narrow mouth. Teeth small. Parts of the skeleton and dermal productions form external mails; scales none or small. The spinous dorsal either absent or formed of isolated feeble spines; the soft dorsal and anal of moderate length; ventral fins abdominal, of six rays, without spine, separate from the pubic bones, which remain attached to the humeral arch. Five branchiostegals; air-bladder large; four gills; pseudobranchiæ; pyloric appendages in small number; intestinal tract short; vertebræ very numerous.

Genus FISTULARIA, L.

Body scaleless. Caudal fin forked, with the two middle rays prolonged into a filament; no free dorsal spines. Teeth small.

Tropical Seas.

644. FISTULARIA SERRATA, Cuv.

Gunth., Cat. Fishes III., p. 533.

B. 7. D. 13-15. A. 14-15. V. 6. C. 2 x 6/2/6 x 2. Vert. 47/34 (Rüp.). 47/29 (Rosenth.)

The outer edge of the tube is very distinctly serrated. Brownish-grey, silvery beneath, sometimes some bluish spots on the back or on the sides.

Port Jackson. All Australian Seas.

Genus AULOSTOMA, Lacep.

Body covered with small scales. Caudal fin rhombic, without filiform rays; a series of isolated, feeble dorsal spines. Teeth rudimentary.

Tropical Seas.

645. AULOSTOMA CHINENSE, L.

Gunth., Cat. Fishes III., p. 538.

D. 8-12/24-27. A. 27/28. V. 6.

The base of the soft dorsal and anal fins is black; sometimes another short, black streak above, across the anterior rays. Ventral fin with a round black spot at the base, sometimes nearly uniform brown without markings. A barbel at the end of the maxillary and another on the chin.

Knob Island, Torres Straits (Castelnau.

DIVISION XIII. ACANTH. CENTRISCIFORMES.

Two dorsal fins, the spinous short, the soft and the anal of moderate extent. Ventral fins truly abdominal, imperfectly developed.

FAMILY XXXIV. CENTRISCIDÆ.

Form of body compressed, oblong or elevated, the anterior bones of the skull much produced, forming a long tube which terminates in a narrow mouth. Teeth none. Body either covered with a cuirass, or with non-confluent ossifications, scales none or small. Two dorsal fins; the spinous short, with one of the spines strong; the soft and the anal of moderate extent. Ventral fins

small, without spine, or rudimentary, abdominal. Branchiostegals three or four; air-bladder large, four gills, pseudobranchiæ. Pyloric appendages none; intestinal tract rather short. Vertebræ in small number.

Genus CENTRISCUS, Cuv.

Body scaly or covered with prickles.

All Seas.

646, CENTRISCUS HUMEROSUS, Richards.

Voy. Erebus and Terror, p. 56, pl. 34.—Gunth., Cat. III., p. 522.
D. 7/15. A. 17. C. 4 x 4 x 5 x 5.

The height of the body is somewhat less than the distance of the operculum from the base of the caudal. The second dorsal spine is exceeding long and strong, its length being a little more than one-half the distance of the opercle from the caudal. The body is strongly compressed and elevated, covered with very small scales each terminating in a spine, and with two series of bony plates on the side of the back. The first dorsal fin is situated far back and immediately above the second.

South Australia (Richardson).

Genus AMPHISILE, Cuv.

Body elongate, strongly compressed, provided with a dorsal cuirass formed by portions of the skeleton; the longitudinal axis of the tail is not in the same line with that of the trunk. Scales none. Teeth none. Two dorsal fins situated on the hindmost part of the back; ventrals rudimentary.

Indian and Chinese Seas.

647. AMPHISILE STRIGATA, Gunth.

Gunth., Cat. Fishes III., p. 528.
D. 3/10. A. 12. C. 10. P. 12. V. 4.

The distance of the posterior margin of the operculum from the root of the pectoral is somewhat less than its distance from the anterior margin of the orbit. A black streak runs from the snout, through the eye and the base of the pectoral fin, along the lower edge of the dorsal cuirass; it is double between the eye and the gill-opening, and undulated along the side.

Cape York.

DIVISION XIV. ACANTH. GOBIESOCIFORMES.

No spinous dorsal, the soft dorsal and anal fins short, or of moderate length, situated on the tail; ventral fins subjugular, with or without an adhesive apparatus between them.

FAMILY XXXV. GOBIESOCIDÆ.

Body rather elongate, anteriorly depressed, naked. Teeth conical, compressed. A single dorsal fin on the tail without spinous portion; anal short; ventrals widely apart with one spine hidden in the skin and four or five rays. Between the ventrals is a large adhesive apparatus, the posterior portion of which is suspended on the coracoid bones, which are partly free, in the axil of the pectoral fins. Three or three and a-half gills. No air-bladder; intestinal tract short, wide, without pyloric appendages. Skeleton firm. Vert. 13-14/13-22.

Genus CREPIDOGASTER, Gunth.

Anterior part of the body depressed; snout produced, much depressed. Dorsal fin situated on the tail. Posterior portion of the adhesive disk with the anterior margin free. Villiform teeth in both jaws without incisors. Gills three; pseudobranchiæ none or rudimentary; gill membranes united under the throat and not attached to the isthmus.

Australia and Tasmania.

648. CREPIDOGASTER TASMANIENSIS, Gunth

Gunth,, Cat. Fishes III., p. 507.

B. 5. D. 10. A. 9.

Caudal fin quite free from dorsal and anal. The coracoid extends upwards somewhat beyond the middle of the base of the pectoral. Snout produced, somewhat pointed, much narrower than the head.

Tasmania. Length twenty-six lines.

649. CREPIDOGASTER SPATULA, Gunth.

Gunth., Cat. Fishes III., p. 508.

D. 6. A. 7.

Dorsal and anal fins terminating at some distance from the caudal. The coracoid extends upwards to the middle of the base of the pectoral fin. Snout very broad and long, much depressed, scarcely narrower than the posterior part of the head.

Mouth of Swan River, dredged in three fathoms. Length twenty-one lines.

DIVISION XV. ACANTH. CHANNIFORMES.

Body elongate, covered with scales of moderate size; no spine in any of the fins, dorsal and anal long. No superbranchial organ, only a bony prominence on the interior surface of the epitympanic bone.

FAMILY XXXVI. OPHIOCEPHALIDÆ.

Body elongate, anteriorly subcylindrical; covered with scales of moderate size; head depressed, covered with shield-like scales superiorly; lateral line with an abrupt curve or subinterrupted. Cleft of mouth lateral, wide; teeth in the jaws and on the palate. Eye lateral. Gill-opening wide, the gill membranes of both sides joined below the isthmus; four gills; no pseudobranchiæ. A cavity accessary to the gill cavity, for the purpose of retaining water. An air-bladder. One long dorsal and anal fin without spines. Ventrals absent or thoracic, of six rays, the outer not branched. Vertebræ numerous; the caudal vertebræ provided with ribs, the abdominal cavity being continued to below the caudal portion.

Genus OPHIOCEPHALUS, Bl.

Ventral fins present. Pyloric appendages two. Fine teeth in the jaws, on the vomer and the palatine bones, sometimes intermixed with larger ones.

Freshwaters of the East Indies.

650. OPHIOCEPHALUS STRIATUS, Bl.

Gunth., Cat. Fishes III., p. 474.—Bleek., Atl. Ichth. Oph., Tab. 3, fig. 1.

D. 40 45. A. 26-27. L. lat. 57. L. tr. 5-6/12-13. Vert. 53-55.

Several large teeth on the side of the lower jaw, those of the palatine bones cardiform. Height of body nearly seven times in the total length; the length of the head three times and three-fourths, the length of the caudal six times; the width of the interorbital space is rather more than the length of the snout and two-ninths of the length of the head. Cleft of the mouth large, the maxillary extending behind the orbit. Eight or ten scales between the orbit and the angle of the præoperculum. The pectoral fin does not reach to the origin of the anal, and its length is one-half of that of the head; the length of the ventral is three-fourths of that of the pectoral. Brownish-grey (in spirits) on the back and the sides, emitting vertical processes towards the belly, which is white. Dorsal and anal fins sometimes with oblique dark streaks; frequently some white dots on a black ground on the hindmost part of these fins.

Sydney (Kner., Voy. Novara, p. 234).

DIVISION XVI. TÆNIIFORMES.

Anal fin absent; caudal rudimentary, or not in the longitudinal axis of the fish. Skeleton soft.

FAMILY XXXVII· TRACHYPTERIDÆ.

Body elongate, strongly compressed, naked; eye lateral; mouth small, dentition feeble. One dorsal fin occupying the whole back with a detached anterior portion, composed of flexible rays. Ventrals thoracic; gill-opening wide, pyloric appendages in very great number. Vertebræ numerous.

Genus REGALECUS, Brünn.

Each ventral fin reduced to a long filament, dilated at the extremity; caudal fin rudimentary or absent.

Europe, Africa, India.

651. REGALECUS GLADIUS, Cuv. & Val.

Gunth., Cat. Fishes III., p. 308.

B. 6. D. 342. A. 0. C. 0. P. 14. V. 1.

The length of the head equals the height of the body, which is contained five times and two-thirds in the distance of the vent from the snout; the snout is truncated, the cleft of the mouth vertical, and the upper jaw very protractile; a series of minute teeth in each of the jaws; the single ventral ray very long, terminating in a broad lobe, and another cutaneous flap on the second third of its length; the anterior twelve dorsal rays are produced, the first five forming a separate division over the eye; skin covered with small tubercles. Colour light grey, purplish on the back; dorsal fin margined with red; head bluish-grey.

Said to have been seen on the Tasmanian Coast.

652. REGALECUS JACKSONENSIS, Ramsay.

Proc. Linn. Soc. N.S. Wales, Vol. V., p. 631 pl. 20.

Port Jackson.

DIVISION XVII. NOTACANTHIFORMES.

Soft dorsal fin absent or quite rudimentary; ventrals abdominal composed of several articulated and unarticulated rays.

FAMILY XXXVIII. NOTACANTHI.

Body elongate, covered with very small scales, snout protruding beyond the mouth. Eye lateral, of moderate size. Dentition feeble. Dorsal fin short, composed of short free spines; anal very long, anteriorly with many spines; ventrals abdominal, composed of more than five soft, and of several unarticulated, rays.

Genus NOTACANTHUS, Bl.

Characters the same as of the Family.

All Seas.

653. NOTACANTHUS SEPSPINIS, Richards.

Vog. Erebus and Terror, p. 54, pl. 32, figs. 4-11.—Gunth., Cat. III., p. 545.

D. 6/1. A. 14/ ?. P. 13-14. V. 2/7.

The ventral fins are completely united to each other, so as to form but one fin, its base being before the vertical from the first dorsal spine. A small forked jointed ray stands in the axil of the last dorsal spine.

King George's Sound.

ORDER II. *ACANTHOPTERYGII PHARYNGOGNATHI.*

The inferior pharynyeal bones are coalesced, with or without a median longitudinal suture. Part of the rays of the dorsal, anal, and ventral fins not articulated, forming spines. Air-bladder without pneumatic duct.

FAMILY I. POMACENTRIDÆ.

Body compressed, more or less short, covered with ctenoid scales. Dentition feeble, palate smooth. The lateral line does not extend to the caudal fin or it is interrupted. One dorsal fin, with the spinous portion as well developed as the soft, or more. Two, sometimes three, anal spines; the soft anal similar to the soft dorsal. Ventral fins thoracic, with one spine and five rays. Branchiostegals five, six, or seven; gills three and a-half; pseudobranchiæ and air-bladder present. Pyloric appendages in small number; intestinal tract of moderate length. Vertebræ 12/14.

Genus AMPHIPRION, Bl.

All the opercles and the præorbital are denticulated, the teeth of the operculum and suboperculum being very long. Teeth in the jaws in a single series, small, conical. Dorsal fin with nine to eleven spines, anal with two. Scales rather small; the lateral line ceases below the end of the dorsal fin. Branchiostegals five. Pyloric appendages two or three.

Indian and Polynesian Seas, Western Pacific.

654. AMPHIPRION CLARKII, Benn.

Gunth., Cat. Fishes IV., p. 5.

Amphiprion polymnus, Bleek., Atl. Ichth. Pomac. Tab. 1, fig. 7-8.

D. 10/16. A. 2/14. L. lat. 55. L. transv. 6/19.

Ground colour brown or black, with three pearl-coloured cross-bands, the last round the tail; thorax, chin, and pectoral, ventral and caudal fins yellow. The dorsal fin is scarcely notched and has the spines stout and short. The caudal fin is emarginate. The height of the body is rather less than one-half of the total length (exclusive of the caudal fin).

Endeavour, Cooktown.

655. AMPHIPRION PERCULA, Lacep.

Gunth., Cat. Fishes IV., p. 6.—Bleek., Atl. Ichth. Pomac. t. 1, f. 2.

D. 11/15. A. 2/12. L. lat. 55. L. transv. 7/23.

Ground colour light brown or brown, with three broad white cross-bands, edged with black; the anterior is curved and encircles completely the hind part of the head, its convexity being directed backwards; the middle descends from the notch of the dorsal fin to the vent, and is angularly produced on the middle of the side; the posterior encircles the free part of the tail; fins with a black and white margin. The dorsal spines are moderately long and strong, the posterior ones much shorter than the middle ones, there being a deep notch between the spinous and soft portions. The height of the body is two-fifths of the length, (caudal fin excluded).

North Australian Seas. Darnley Island.

656. AMPHIPRION BICINCTUS, Rupp.

Gunth., Cat. Fishes IV., p. 8.

B. 5. D. 10/16. A. 2/14. L. lat. 58. L. transv. 8/20.

Brownish, with two white cross-bands, one across the head and neck, the other across the middle of the body; the soft dorsal fin is greenish, the others yellow, the ventral having the outer margin brown. Caudal fin emarginate, sometimes with the upper lobe produced. Dorsal fin scarcely notched, with the spines of moderate strength and length. The height of the body is one-half or a little more than one-half the length, (exclusive of the caudal fin).

Port Darwin.

657. AMPHIPRION MELANOPUS, Bleek.

Atl. Ichth. Pomac., Tab. 2, fig. 7.—Gunth., Cat. Fishes IV., p. 8.

D. 10/17. A. 2/14. L. lat 48-50. L. transv. 5/18.

Brownish black, lighter anteriorly, with a pearl-coloured band from the neck to the opercles; tail yellow posteriorly; ventral and anal fins black; dorsal, caudal, and pectoral fins yellow.

Dorsal spines moderately strong. The height of the body is one-half of the length (the caudal fin not included).

Port Darwin. One very young specimen almost entirely yellow.

658. AMPHIPRION TRICOLOR, Gunth.

Gunth., Cat. Fishes IV., p. 8.

D. 10/16-17. A. 2/14-15. L. lat. 56. L. transv. 7/19.

Blackish-brown: thorax, all the lower parts, and the free portion of the tail dull orange-coloured; a pearl-coloured band, edged with black, from the nape of the neck across the opercles. Ventral, anal, and caudal fins dull orange-coloured; the two former edged with black—the ventral exteriorly, the anal inferiorly. Præorbital and præoperculum strongly serrated. The dorsal fin is nearly even, the middle and posterior spines being about the same length. Caudal rounded. The height of the body is one-half of the length, (caudal fin not included).

Port Darwin.

659. AMPHIPRION RUPPELII, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 91.

D. 10/18. A. 2/14. L. lat. 38.

Height of body twice and two-thirds in total length, diameter of eye three times in the length of the head; the upper profile very convex; the lower jaw longer than the upper; the infra-orbital very strongly serrated; the snout considerably shorter than the diameter of the eye; the præoperculum feebly denticulated on its posterior edge, and not at all on the inferior one; the operculum is very strongly serrated and four-lobed. Dorsal fin equal, without notch, caudal rounded, with the central rays prolonged. General colour dark brown, much paler in young specimens, with a very large, black blotch covering all the back and the sides up to the base of the pectoral fins, and two pearly cross-bands one from the nape, the other narrow about the middle of the body.

Port Darwin. Cape York.

660. **Amphiprion bicolor**, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 92.

D. 13/13. A. 2/12.

The height of the body is twice and two-thirds in the total length, the length of the head four times; the diameter of the eye three times in the length of the head. Præoperculum bilobed and strongly serrated. The thirteenth spine of the dorsal fin much the longest, the caudal fin is oblong. The colour is deep black, with three transverse, pearly bands; the first arched and covering the posterior part of the head, the second beginning on the ninth, tenth, and eleventh dorsal spines, straight on its posterior edge, but dilated on the anterior below the pectoral fins, the third on the tail; the edge of the second dorsal, caudal, and anal fins, and the pectorals white.

Port Darwin.

Genus **Premnas**, Cuv.

All the opercles serrated, the præorbital terminating in a very strong and long spine posteriorly. Teeth small, conical, in a single series. Dorsal fin with nine or ten spines, anal with two. Scales small; the lateral line ceases below the end of the dorsal fin. Branchiostegals five or six; gills three and a-half, pseudobranchiæ present; pyloric appendages three.

Indian Seas. Australia.

661. **Premnas gibbosus**, Casteln.

Researches on the Fishes of Australia, p. 34.

Body oval, compressed, the profile descends abruptly from the back; the head is rounded and convex above and almost truncate in front. The eye is large, its diameter being about twice and a-half in the length of the head; snout very short; teeth large, square, truncate; præorbital with two spines the upper one long and straight, the other half the length. The operculum has five or six moderate and equal obtuse teeth on the lower edge. Black, with the sides of an olive yellow; four pearl-coloured cross-bands, bordered with black, one on the posterior part of the head, one towards the middle of the body and two on the tail.

Cape York, (Castelnau).

Genus DASCYLLUS, Cuv.

Præoperculum and sometimes the præorbital serrated. Teeth small, villiform, in a narrow band, with an outer serier of somewhat larger ones. Dorsal fin with twelve or thirteen spines, anal with two. Scales of moderate size, in less than thirty transverse series; the lateral line ceases below the soft dorsal fin. Branchiostegals five; pseudobranchiæ; air-bladder large; pyloric appendages two or three.

Indian and Polynesian Seas.

662. DASCYLLUS ARUANUS, L.

Gunth., Cat. Fishes IV., 12.

Tretradachmum arcuatum, Cant.—Bleek., Atl. Ichth. Pomac., tab. 10, fig. 6.

D. 12/12. A. 2/12. L. lat. 26-27. L. transv. 3/9. Cæc. pylor. 3. Vert. 12/14.

Three black cross-bands: the first descending obliquely from the origin of the spinous dorsal fin through the orbit to the chin, leaving a greyish patch on the forehead; the second slightly curved, from the sixth to ninth dorsal spines to the ventral fins, which are black; the third from the soft dorsal to the anal; dorsal and anal fins black; caudal whitish.

Queensland (Castelnau).

663. Dascyllus fasciatus, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 361, pl. 10, fig. 2.

Port Darwin.

Genus Heptadecanthus, All. & Macl.

Body high, compressed. Præoperculum and præorbital finely serrated. Teeth conical, in a single series, with minute teeth between. Dorsal fin with seventeen spines, anal with two. Scales moderate; the lateral line extends to the commencement of the soft dorsal. Gills three and a-half; pseudobranchiæ.

Australia.

664. Heptadecanthus longicaudis, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 343, pl. 15, fig. 3.

Cape Grenville (Chevert Exp.)

Genus Pomacentrus, Cuv. & Val.

Præoperculum and generally the infraorbital ring serrated; operculum with one or two small spines. Teeth small, compressed, with the crown entire or slightly emarginate, in a single series. Dorsal fin with twelve or thirteen spines, anal with two. Scales of moderate size, of less than thirty transverse series; the lateral line ceases below the soft dorsal fin. Branchiostegals five; pseudobranchiæ; an air-bladder; pyloric appendages three.

All tropical seas; chiefly Indian and Polynesian.

665. Pomacentrus littoralis, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 32.—Bleek., Atl. Ichth. Pomac., tab. 5, fig. 8.

D. 12-13/15-13. A. 2/14-15. L. lat. 26-27. L. transv. 3/9. Vert. 11/15.

The height of the body is twice and four-fifths in the total length; præorbital strongly denticulated with one or two stronger teeth anteriorly; the dorsal spines increase in length backwards, caudal fin emarginate, with the lobes rounded. Brown, either uniform or with darker spots—one at the base of the pectoral, one at the commencement of the lateral line, and one on the back of the tail behind the dorsal fin.

Port Darwin, Endeavour, Palm Islands.

666. POMACENTRUS CHRYSURUS, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 29.

D. 13/15 A. 2/15. L. lat. 26. L. transv. 3/10.

The height of the body is contained twice and three-fourths in the total length. Snout rather shorter than the eye; the diameter of which is nearly one-third of the length of the head; interorbital space slightly convex, as broad as the orbit. Præorbital naked, half as broad as the orbit, with a shallow notch anteriorly, and a spinous tooth posteriorly; scales on the cheek in two series; the lower præopercular limb with another series of very small scales; præoperculum strongly serrated. Teeth narrow. The two last dorsal spines rather longer than the middle ones, three-fifths as long as the head; the soft dorsal and anal rounded; caudal fin emarginate, its length being a little more than one-fifth of the total. Brown: caudal fin yellow, the others blackish, sometimes a round, black spot, edged anteriorly with bluish, near the base of the six last dorsal rays; an indistinct brown dot superiorly in the axil of the pectoral. No spot at the origin of the lateral line.

Darnley Island.

667. POMACENTRUS SCOLOPSIS, Quoy. & Gaim.

Gunth., Cat. Fishes IV., p. 28.

D. 12/16-17. A. 2/13-14. L. lat. 27. L. transv. 2/10. Vert. 12/15.

The height of the body is two-fifths of the total length; the præorbital is serrated. The posterior dorsal spines are scarcely longer than the middle ones; caudal fin slightly emarginate, with the lobes rounded. Blackish-brown, each scale with a silvery dot; a curved silvery line round the lower part of the orbit. A black spot on the base of the last three dorsal rays and another superiorly in the axil of the pectoral.

Port Darwin.

I have several specimens about four inches long. In all of them there are two silvery lines in front of the eye, and a distinct black spot on the upper margin of the operculum. It may prove to be another species.

668. POMACENTRUS BANKANENSIS, Bleek.

Gunth., Cat. Fishes IV., p. 26.

D. 13/14. A. 2/14-15. L. lat. 26-28. L. trans. 3/9.

The height of the body is contained twice and two-thirds in the total length; præorbital denticulated. The dorsal spines increase in length backwards; caudal fin subtruncated. Brownish: caudal fin yellow, each scale with a bluish dot; two bluish lines along the forehead, convergent on the snout, and extending on to the back; two similar lines through the iris to the maxillary; a dark blue spot superiorly on the operculum; a black ocellus edged with white on the base of the ninth, tenth, and eleventh dorsal rays.

Port Darwin.

669. POMACENTRUS OBSCURUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 343, pl. 15, fig. 2.

Torres Straits.

670. POMACENTRUS BILINEATUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 89.

D. 13/14. A. 2/14. L. lat. 30. L. transv. 3/9.

Height of body twice and two-thirds in the total length, length of head four times; diameter of eye twice and a-half in the length of the head. Præorbital and præoperculum strongly crenulated; the dorsal spines increase in length backwards; the two outer rays of the ventral fins terminate in filaments which extend to the second anal spine. Colour (in spirits) light purple brown; a narrow blue line runs over each eye, from the mouth to the base of the dorsal fin, these lines unite over the mouth; several other blue lines, irregular and interrupted, run on the sides of the head; two or three light blue dots on each scale; fins yellow, extremity of dorsal rather obscure.

Port Darwin.

671. POMACENTRUS MODESTUS, Casteln.

Researches on the Fishes of Australia, p. 35.

D. 13/12. A. 2/? L. lat. 18.

Height of the body twice and one-third in the length, without the caudal fin; length of head a little over three times in the same; infraorbital ring entire; præoperculum strongly serrated, operculum sinuous on its edge; scales of the body very large and ciliated; the second anal spine is very long; the ventrals are elongate, nearly as long as the head; the inferior profile convex behind the operculum. The colour (in spirits) is brownish red; the caudal, ventral, and pectoral fins have a yellow tinge. Length two inches.

Gulf of Carpentaria.

672. POMACENTRUS DOLII, *n. sp.*, (Plate I., fig. 1.)

D. 13/12. A. 3/12. L. lat. 20.

Body much more convex on the under side than on the back. The height of the body one-third of the total length, the length of the head one-fifth, the diameter of the eye is greater than the length of the snout, which is short and obtuse, with the cleft of the mouth very oblique. A single row of incisor teeth in each jaw, the intermaxillary bone is covered with a rather large uniformly broad lip, the maxillary showing largely behind and beneath it. The operculum and præoperculum completely covered with ctenoid scales, the spines of the former very small, as are also the serrations of the latter. The lateral line is marked on twenty scales. The vertical fins are low and increase slightly backwards, the dorsal commencing above the origin of the pectorals; the caudal fin is broad and bilobed. The colour (in spirits) is a pale brownish-yellow, with a small black spot at the upper root of the pectoral fins.

Port Jackson. Length from three to four inches.

Two specimens found in a large *Dolium* shell. A very curious Fish, which might well be placed a in new genus.

Genus GLYPHIDODON, Gill.

Præoperculum not denticulated. Teeth compressed, in a single series; the series sometimes composed of alternate teeth. Dorsal fin with twelve or thirteen spines, anal with two. Scales of moderate size, in thirty or less transverse series; the lateral line ceases below the posterior portion of the dorsal fin. Branchiostegals five or six; pseudobranchiæ present; an air-bladder, pyloric appendages three.

Tropical and temperate seas of both hemispheres.

Glyphisodon is the name given to this genus by Lacepede and Cuvier. Dr. Gunther has substituted *Glyphidodon* as being more correct.

673. GLYPHIDODON CŒLESTINUS, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 38.—Bleek., Atl. Ichth. Pomac., tab. 9, fig. 5.

D 13/13. A. 2/12-14. L. lat. 29-30. L. transv. 4/11. Vert. 11/15.

The height of the body is one-half or somewhat more of the length, (exclusive of caudal fin). The width of the interorbital space equals that of the orbit, in adult specimens rather more; the breadth of the infraorbital ring below the centre of the eye is one-third of the greatest breadth of the præorbital. The soft dorsal fin is produced into a point, the fourth and fifth rays being the longest; caudal fin forked. Body with five blackish cross-bands, which are not broader than the interspaces between them; the first from before the origin of the spinous dorsal to the base of the pectoral fin; the second from the fourth, fifth, and sixth dorsal spines towards the middle of the ventral fin; the third from the tenth, eleventh, and twelfth dorsal spines towards the anal spines; the fourth from the middle of the anal fin; the fifth across the middle of the free portion of the tail.

Port Darwin (Macl. Mus.)

674. GLYPHIDODON WAIGIENSIS, Bleek.

Dr. Gunther places this species as a synonym of *G. cœlestinus*, but with some doubt, as he notices the more elevated form of the body. Count Castelnau regards it as undoubtedly distinct. The height of the body is three-fifths of the length, (exclusive of the caudal fin). The colóur is olive-yellow, with the upper part of the head, the fins and five *narrow* transverse bands, black. Pectoral fins transparent. Length four inches.

Cape York.

675. GLYPHIDODON BANKIERI, Richards.

Gunth., Cat. Fishes IV., p. 54.—Bleek., Atl. Ichth. Pomac., tab. 9, fig. 8.

D. 13/10-11. A. 2/10-11. L. lat. 26-28.

The height of the body is two-fifths of the length, (the caudal fin not included); the snout is shorter than the eye; the width of the infraorbital ring below the orbit is less than one-third of that of the orbit; each jaw with about forty teeth, the anterior ones short, distinctly compressed. The middle rays of the dorsal and anal fins form an angular point; caudal deeply forked, with the lobes more or less produced into filaments. Violet; tail and caudal fin orange-coloured; the scales on the head and tail with a blue dot, those on the trunk with a transverse streak; a blue ocellus edged with brown at the origin of the lateral line. Dorsal fin brownish-violet, yellow posteriorly; anal brownish-yellow; pectoral with a large brown spot superiorly at the base.

Cape Grenville (Chevert Exp.)

676. GLYPHIDODON VICTORIÆ, Gunth.

Ann. and Mag. Nat. Hist., 1873, Vol. XI., p. 115.—Castelnau, Proc. Zool. Soc., Victoria, Vol. I., p. 146.

"*Rock Perch*" of the Melbourne Fishermen.

D. 13/17. A. 2/15. L. lat. 30. L. transv. 4/10.

The height of the body is somewhat less than one-half of the length (without the caudal fin). Teeth narrow, not emarginate, twenty-one on each side of the upper jaw. Infraorbital scaly; the width of the præorbital is two-thirds of that of the orbit. Five or six series of small scales on the cheek. Vertical fins scaly nearly to their margins. The third and seventh dorsal spines nearly equal, one-half the length of the head. Caudal fin forked. Reddish-violet (in a dried state); fins yellowish; a broad purplish white stripe round the operculum.

Port Phillip. Length eight to ten inches.

Glyphisodon nigroris, Cuv. and Val. belongs evidently to the vegetable feeding division of the *Sparidæ;* Dr. Gunther refers it to the genus *Melambaphes*, described by him in "Ann. and Mag. Nat. Hist., 1863, Vol. XI., p. 115.

Genus PARMA, Gunth.

Præoperculum not denticulated. Teeth compressed, in a single series. Dorsal fin with twelve or thirteen spines, anal with two. Scales of moderate size, in more than thirty transverse series;

the lateral line ceases below the posterior portion of the dorsal fin.

Pacific Ocean.

677. Parma microlepis, Gunth.

Gunth., Cat. Fishes IV., p. 57.

D. 13/18. A. 2/16. L. lat. 37. L. transv 4/13.

The height of the body is two-fifths of the length exclusive of the caudal fin; teeth very narrow and slender; præorbital much narrower than the orbit. The fourth and fifth dorsal spines are the longest, the posterior being shorter than those in the middle; caudal fin emarginate. Brown, with two blue lines on each side of the back: the upper commences below the spinous dorsal fin, and extends above the orbit to the snout; the lower from the ocellus above the lateral line to the orbit. A large black ocellus edged with blue on the four posterior dorsal spines; body with scattered blue dots, the dots forming a series or an uninterrupted line below the orbit; anal and ventral fins blackish; a blue spot posteriorly in the axil of the dorsal fin.

Port Jackson.

678. Parma squamipinnis, Gunth.

Gunth., Cat. Fishes IV., p. 58.

D. 12-13/15-17. A. 2/15. L. lat. 40. L. transv. 5/14.

The height of the body is one-half the length, exclusive of the caudal fin. Snout a little longer than the eye. Teeth narrow, compressed, of moderate length, about fifty in the upper jaw. Præorbital scaly, rhombic, its width above the angle of the mouth, being two-thirds of that of the orbit. The scales on the upper surface of the head advance nearly to the extremity of the snout; præoperculum covered with small scales, a narrow space round its margins being naked. Scales on the operculum half the size of those on the middle of the body. The fourth to eighth dorsal spines are the longest, and of moderate strength. The anterior half of the soft dorsal fin is much higher than the spinous, and the posterior part of its upper margin is vertical. Caudal fin deeply forked, with the lobes somewhat pointed, the upper lobe being as long as the head. The second anal spine is as long as, but stronger than the longest dorsal spine; the basal half of the dorsal, and nearly the whole of the caudal and anal fins are covered with scales. The ventral extends to the anal. Uniform brownish (in a preserved state), with the fins blackish; posterior margin of the soft dorsal white. The colour during life appears to have been red with golden reflections.

Port Jackson. Length six inches.

679. PARMA POLYLEPIS, Gunth.

Gunth., Cat. Fishes IV., p. 59.

D. 13/18. A. 2/14. L. lat. 40. L. transv. 5/15.

The height of the body is more than one-half of the length exclusive of the caudal fin; the profile between the dorsal fin and the snout is arched, forming nearly a-quarter of a circle. Snout elevated, a little longer than the eye; teeth very narrow, compressed, about fifty in the upper jaw. Præorbital naked, subquadrangular, nearly as wide as the eye. The scales on the upper surface of the head do not advance to the front margin of the eye; præoperculum covered with small scales, a narrow space round the margin, naked. Scales on the operculum of about the same size as those on the body. The dorsal spines are of moderate length and strength, increasing in length posteriorly; they are nearly entirely enveloped in scales; the soft dorsal is angular, with the posterior partof its upper margin vertical. The second anal spine is as long as, but stronger than the longest of the dorsal fin. Anal and caudal fins scaly. Caudal fin forked, with the lobes rounded, the upper lobe being as long as the head. The ventral fin extends to the anal. Colour apparently greenish, with the fins and snout blackish, and two broad brown cross-bands, one below the middle of the spinous dorsal fin, the other between the soft dorsal and anal.

Norfolk Island.

Genus Heliastes, Gunth.

Præoperculum not denticulated. Teeth small, conical, in a narrow band, or irregular series. Dorsal fin with twelve to fourteen spines, anal with two. Scales of moderate size; the lateral line ceases below the posterior portion of the dorsal fin. Branchiostegals five; pseudobranchiæ; pyloric appendages two.

Tropical and temperate Seas.

680. Heliastes hypsilepis, Gunth.

Ann. and Mag. Nat. Hist., 1867. Vol. XX., p. 66.

D. 13/14. A. 2/13-14. L. lat. 29.

The height of the body is a little less than one-half the length exclusive of the caudal fin. The scales on the sides are twice as deep as long; the soft dorsal and anal fins are pointed; the caudal is deeply forked, and the second anal spine is longer and stronger than those of the dorsal. Yellowish (in spirits) with a white spot below the end of the soft dorsal fin, and with the upper half of the base of the pectorals black.

Port Jackson.

Family II. LABRIDÆ.

Body oblong or elongate, covered with cycloid scales. The lateral line extends to the caudal fin, or is interrupted. One dorsal fin, with the spinous portion as well developed as, or more than, the soft; the soft dorsal similar to the anal. Ventral fins thoracic, with one spine and five soft rays. Palate without teeth; only one lower pharyngeal bone without median suture. Branchiostegals five or six; gills three and a-half; pseudobranchiæ and air-bladder. Pyloric appendages none; stomach without cæcal sac.

Genus CHÆROPS, Rüpp.

Body compressed, oblong, covered with rather large scales; snout obtuse; cheeks high, with very small scales which are generally not imbricate; operculum scaly. Each jaw anteriorly with four strong canine teeth, the lateral teeth being more or less confluent into an obtuse osseous ridge. Dorsal spines thirteen, anal three. Lateral line not interrupted.

Indian and Australian seas.

681. CHÆROPS MACRODON, Bleek.

Gunth., Cat. Fishes IV., p. 94.—Bleek., Atl. Ichth. Labr., tab. 47., fig. 1.

D. 13/7. A. 3/9. L. lat. 32.

A posterior canine tooth. Serrature of the præoperculum minute in young specimens, and lost with age. Head obtuse, with the forehead elevated, its length being two-sevenths of the total. Scales on the cheek subimbricated. Ground colour of the head and of the back darker than that of the posterior and inferior parts and dotted with red; a more or less distinct white blotch below the lateral line, covered by the hinder third of the pectoral fin. Dorsal fin blue, with orange-coloured spots along the base, and with two bands of the same colour along the middle; anal blue, reticulated with orange; caudal greenish; pectoral yellow, dark blue at base.

North Coast of Australia.

682. CHÆROPS OMMOPTERUS, Richards.

Gunth., Cat. Fishes IV., p. 94.

Chærops Schönleinii, Bleek., Atl. Ichth. Labr., tab. 46, fig. 3.

D. 13/7. A. 3/10. L. lat. 29. L. trans. 4/12.

No posterior canine tooth. Serrature of the præoperculum very distinct. Head obtuse, as high as long; præorbital very high; scales on the cheek not imbricate. Green, each scale with a blue spot in the centre; an oblique, blue band from the angle of the mouth to the interoperculum; a blue streak round the gill-opening; dorsal fin with a series of blue spots along the middle and with a round, black spot on and before the last spine; anal fin with a blue streak along the base, two series of blue spots and a purple margin; corners of the caudal fin purplish.

Cape York. Port Darwin.

683. CHÆROPS NOTATUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 344, pl. 16, fig. 1.

Cape Grenville (Chevert Exp.)

684. CHÆROPS CYANODON, Richards.

Voy. Erebus and Terror, Fishes, p. 131, pl. 55, fig. 5-7.—Gunth., Cat. IV., p. 96.

D. 13/7. A. 3/10. L. lat. 30. L. transv. 3/10.

No posterior canine tooth. Præoperculum not serrated. Head obtuse, as high as long; præorbital very high; scales on the cheek not imbricate. Back crossed by three or four dark bands, separated by shining silvery interspaces; dorsal and anal fins with yellow longitudinal lines; caudal greyish, with small round transparent spots, and with an intramarginal line; pectoral with a blackish upper margin. The dark cross-bands are sometimes indistinct.

Western Australia, Port Essington, and Cape York.

685. CHÆROPS RUBESCENS, Gunth.

Gunth., Cat. Fishes IV., p. 97.

D. 13/7. A. 3/10. L. lat. 30. L. transv. 4/12.

No posterior canine tooth. Serrature of the præoperculum very distinct. Uniform reddish.

West Coast of Australia.

686. CHÆROPS CRASSUS, Casteln.

Researches on the Fishes of Australia, p. 39.

D. 13/12. A. 3/13.

No posterior canine tooth. Præoperculum not serrated. Scales on the cheeks imbricate, in five series; body short and thick; the extremities of the dorsal and anal fins rather prolonged; caudal fin truncate. Coloration (in a preserved state) dark bluish purple on the upper parts, white or yellow beneath, sometimes a dark narrow submarginal line on the dorsal fin.

Dampier's Archipelago. Length one foot.

Salted and used as food by the pearl fishers.

687. CHÆROPS CEPHALOTES, Casteln.

Researches on the Fishes of Australia, p. 39.

D. 14/7. A. 3/10. L. lat. 30.

Head one-third of the length of the fish, (exclusive of caudal fin), and nearly as high as long; forehead prominent and very convex; snout very obtuse and convex; head covered with small tubercles formed by scales buried in the skin; operculum with large scales; canine teeth very large; no posterior canine. Eye one-sixth of the length of the head. Dorsal and anal fins pointed behind; caudal rounded. Coloration above purple, beneath yellow or white; the cheeks and operculum covered with small white spots; the spinous dorsal has an obscure band on its base; the anal and caudal are dotted with white, the other fins greyish. Præoperculum without serrature.

Cape York. Cape Grenville. Length thirteen inches.

Genus XYPHOCHILUS, Bleek.

Body oblong, covered with large scales. Head scaly, nearly as high as long; snout obtuse; both limbs of the præoperculum naked. Lateral line continuous. Fins not scaly at the base;

dorsal spines eleven or twelve; anal, three. The upper lip is thin, sword-shaped and can be nearly entirely hidden beneath the præorbital. Both jaws anteriorly with four canine teeth; the lateral teeth united into an osseous ridge; a posterior canine tooth. Six branchiostegals.

Indian Ocean and Archipelago.

688. XYPHOCHILUS FASCIATUS, Gunth.

Proc. Zool. Soc., London, 1867, p. 101, pl. 10.

D. 12/8. A. 3/10. L. lat. 29. L. transv. 4/10.

The height of the body is one-third of the total length; the length of the head nearly one-fourth. Head rather longer than high, compressed, the width of the interorbital space (which is flat) being equal to the diameter of the eye. Eye immediately below the upper profile, in the middle of the length of the head. Anterior and posterior canine teeth greenish-blue. Scales on the cheek in six series. Opercular membrane of moderate extent. Pectoral fin without a notch behind, nearly as long as the head, extending to the vent. Caudal fin truncate. The head and upper part of the body seems to have been reddish-orange, the hinder and lower parts greenish. Head and body with bluish-ashy cross-bands edged with violet: two narrow in front of the eyes, one broad, between the eyes, one from the eye to the mouth and round the chin, one from the nape to the throat and five on the body. Dorsal fin orange with the base and tips violet; anal and ventral similar; pectoral and caudal orange-coloured. Length eight inches.

Cape York.

Genus TROCHOCOPUS, Gunth.

Body oblong, covered with rather small scales; head scaly, as long as, or longer, than high, with the snout of moderate extent; both limbs of the præoperculum naked and without serrature.

Lateral line continuous. Base of the soft dorsal not scaly. Both jaws with four canine teeth anteriorly; lateral teeth distinct; a posterior canine tooth.

Indian and Australian Seas.

689. TROCHOCOPUS UNICOLOR, Gunth.

Ann. and Mag. Nat. Hist., 1876, Vol. XVII., p. 398.

D. 11/11. A. 3/11. L. lat. 45.

Eight longitudinal series of scales between the lateral line and spinous dorsal fin. Snout rather obtuse; the small eye nearly in the middle of the length of the head. The height of the body is little more than the length of the head, and one-third of the total length, exclusive of the caudal fin. The membrane behind each dorsal spine deeply excised. Dorsal spines short and stout. Coloration uniform brownish black.

Port Jackson. (Damel.)

690. TROCHOCOPUS RUFUS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 35, pl.5, fig. 3.

King George's Sound.

Genus COSSYPHUS, Gunth.

Body compressed, oblong, with scales of moderate size; snout more or less pointed; imbricate scales on the cheeks and opercles; vertical fins scaly on their basal portion. Lateral line not interrupted. Teeth in the jaws in a single series; four canine teeth in each jaw anteriorly; generally a posterior canine tooth. Formula of fins D. 11-12-13/9-11. A. 3/10-12-14.

Tropical and semitropical seas.

691. COSSYPHUS VULPINUS, Richards.

Ann. and Mag. Nat. Hist., 1851, Vol. VII., p. 287.

Br. 4. D. 12/11. A. 3/12. C. 14. 2/2. P. 16. V. 1/5.

The height of the body is one-fourth of the total length, and about equal to the length of the head. The profile rises in a concave line at an angle of 30° from the acute snout to above the back of the orbit, from that to the commencement of the dorsal fin the profile almost horizontal. The lateral teeth are widely set, six on each upper jaw and fourteen on each lower. The præorbital and lower jaw are without scales; the posterior line of the præoperculum is finely serrated; there are six rows of scales on the cheek and on the interoperculum, those on the disk of the præoperculum are smaller than these, and those on the operculum and suboperculum larger. L. lat. 30. The first dorsal spine stands over the axil of the ventrals, and the ventral spine beneath the base of the lowest pectoral ray. The soft parts of the dorsal and anal fins are somewhat peaked and rise above the spines. The angles of the caudal project a little beyond the straight intermediate border. Colour uniform, faded.

Australia. Length sixteen inches.

The above is a curtailed description of this Fish as given by Sir John Richardson. It seems to resemble very closely the next species.

692. COSSYPHUS UNIMACULATUS, Gunth.

Gunth., Cat. Fishes IV., p. 109.

"*Pig Fish*" of Sydney Fishermen.

D. 12/11. A. 3/12. L. lat. 36. L. trans. 6/12.

Snout pointed, its length being more than one-third of the head; head longer than high; præoperculum minutely serrated; pectoral fin obliquely rounded, more than half the length of the head; the ventral longer, the first ray produced. The dorsal fin increases gradually in height from the first spine to the seventh soft ray, the last spine is twice as long as the first and equal to the ventral spine. The anal spines are exceedingly strong, the third longest, nearly as long as the twelfth dorsal spine; the longest ray of the anal is shorter than the base of the fin. Caudal fin emarginate with the lobes produced. Colour uniform red, with an oblong deep black spot at the base of the sixth and eighth dorsal spines, and a small black speck on the fifth and ninth.

Port Jackson.

693. Cossyphus Gouldii, Richards.

Ann. and Mag. Nat. Hist., 1851, Vol. VII., p. 288.—Gunth., Cat. Fishes IV., p. 111.

"*Blue Groper*" of Sydney Fishermen.

D. 11/11. A. 3/11. L. lat. 39. L. transv. 6/14.

No posterior canine teeth. Upper profile of head bent downwards in a regular curve; præorbital elevated; scales on the cheek not imbricate; præoperculum not serrated; dorsal fin scaly; caudal truncated. Colour uniform dark purple.

Western Australia. Port Jackson.

This species should be placed in another genus. It is a very large fish, attaining a length of from three to four feet.

Genus Labrichthys, Bleek.

Body compressed, oblong, covered with large scales; snout more or less pointed. Opercles scaly; cheeks more or less scaly; præoperculum not serrated; lateral line continuous. Teeth in the jaws in a single series; sometimes an interior series of smaller teeth to replace the others. Posterior canine tooth generally present. Formula of the fins D. 9/11. A. 3/10.

Pacific and Indian Archipelago.

694. Labrichthys celidota, Forst.

Gunth., Cat. Fishes IV., p. 113.—Richards., Voy. Erebus and Terror, p. 53, pl. 31, f. 1-5.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/9. Vert. 10/13.

A posterior canine tooth, (absent in young specimens). Reddish olive (in spirits), with some irregular cloudy spots, several forming indistinct cross-bands; a large round brown patch on the lateral line, below the origin of the soft dorsal fin; two brown streaks radiate from the orbit to the shoulder and to the operculum, another across the præorbital. Anal fin with two brown spots near the base. Cheeks with several series of scales, base of dorsal fin not scaly.

Port Essington. Botany Bay?

695. LABRICHTHYS BOTHRYOCOSMUS, Richards.

Voy. Erebus and Terror, p. 53, pl. 31, f. 6-10.—Gunth., Cat. Fishes IV., p. 114.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/9.

A posterior canine tooth. Reddish or greenish-olive (in spirits); a cluster of black spots between the lateral line and the hind part of the spinous dorsal fin. Infraorbital ring with a bluish streak. Dorsal and anal fins with a dark longitudinal band. Dorsal fin not scaly; cheek with several series of scales.

South Australia. Tasmania.

696. LABRICHTHYS PSITTACULA, Richards.

Voy. Erebus and Terror, p. 129, pl. 56, f. 7-10.—Gunth., Cat. Fishes IV., p. 114.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/9. Vert. 9/16.

A posterior canine tooth. Two anterior canines in each jaw; cheek entirely scaly below the eye, the scales arranged in four series. Uniform hyacinth-red; the soft dorsal and anal fins with five or six series of yellow spots; a few streaks behind the angle of the mouth.

Tasmania.

697. LABRICHTHYS INSCRIPTA, Richards.

Voy. Erebus and Terror, p. 134, pl. 56, f. 1-2.—Gunth., Cat. Fishes IV., p. 115.

D. 9/11. A. 3/10. L. lat. 25-27. L. transv. 3/9.

A posterior canine tooth. The anterior pair of mandibulary teeth long, subhorizontal. Cheek with five to seven series of small scales. Dark brown, with a pale mark on each scale, bearing some resemblance to the characters of the Persian alphabet. Some dark marks on the cheek and præoperculum, and one on the base of the pectoral fin; the membrane connecting the three first dorsal spines is blackish, sometimes with pale specks. Anal fin uniform, or with many pale specks.

Norfolk Island.

698. LABRICHTHYS LATICLAVIUS, Richards.

Voy. Erebus and Terror, p. 128, pl. 56, f. 3-6.—Gunth., Cat. Fishes IV., p. 115.

D. 9/11. A. 3/10. L. lat. 26. L. transv. 3/9. Vert. 9/16.

A posterior canine tooth. Two anterior canine teeth in each jaw. Caudal fin rounded. Green, with two red (blackish in spirits) longitudinal bands, which are confluent on the side of the tail; another, rather indistinct and interrupted, along the lower side of the tail. Dorsal and caudal fins purplish, edged with vermilion and blue, and spotted posteriorly with round blue spots. The anal fin has along the base a narrow vermilion stripe, then a broad yellow one, edged above and below with blue, and lastly a band of purple, spotted thickly with blue and edged with the same.

Tasmania. King George's Sound. Port Jackson.

699. LABRICHTHYS LUCULENTA, Richards.

Voy. Erebus and Terror, p. 130.—Gunth., Cat. Fishes IV., p. 116.

D. 9/11. A. 3/10. L. lat. 25. L. transv. 3/7.

A posterior canine tooth. The interopercles overlapping each other. Four anterior canine teeth in the lower jaw, two in the upper; cheek with about six series of small scales. Greenish or reddish, each scale below the lateral line with a vertical silvery line; a black spot on the two first dorsal spines; sometimes two irregular brown lines along the snout, and two blackish spots on the base of the soft dorsal fin. Scales of the back extending on to the base of the dorsal fin.

East and West Coast of Australia. Norfolk Island.

700. LABRICHTHYS TETRICA, Richards.

Voy. Erebus and Terror, p. 126, pl. 55, f. 1.—Gunth., Cat. Fishes IV., p. 116.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/9.

A posterior canine tooth. Two anterior canine teeth in each jaw; cheek with only two series of narrow scales, a large portion of it being naked. Uniform purplish-red: vertical fins dark at the base, whitish towards the margins, and black at the tips; pectorals with a black spot superiorly at base.

Tasmania, South Australia, and King George's Sound.

701. LABRICHTHYS PARILA, Richards.

Ann. and Mag. Nat. Hist. 1851, Vol. VII., p. 286.—Gunth., Cat. Fishes IV., p. 117.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/10.

No posterior canine tooth. Two anterior canine teeth in each jaw; cheek with only one (indistinct) series of scales, the greater part of it being naked. Greenish, irregularly spotted and dotted with brown, the spot on the anterior dorsal spines being darker than the others.

West Australia (Richardson). Port Jackson (Castelnau, Proc. Linn. Soc. N.S. Wales, Vol. III., p. 389.)

702. LABRICHTHYS GYMNOGENIS, Gunth.

Gunth., Cat. Fishes IV., p. 117.—Castelnau, Proc. Linn. Soc. N.S. Wales, Vol. III., p. 389.

D. 9/11. A. 3/10. L. lat. 25. L. transv. 3/10.

A posterior canine tooth. Cheek nearly naked, only a single series of small scales descending from behind the eye to below the infraorbital ring. Greenish (in a dried state), in life purplish brown, with more or less numerous whitish-red spots, anal fin with a dark longitudinal band; vertical fins with a narrow dark edge.

Port Jackson.

703. LABRICHTHYS PUNCTULATA, Gunth.

Gunth., Cat. Fishes IV., p. 118.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/10.

A posterior canine tooth. Cheek nearly naked, some rudimentary scales being situated near the limb of the præoperculum. Yellowish-olive (in a dried state) with numerous bluish dots; they are edged with brownish on the middle of the length of the fish, and entirely brownish posteriorly on the tail.

West Australia.

704. LABRICHTHYS GUNTHERI, Bleek.

Gunth., Cat. Fishes, app. Vol. IV., p. 507.

D. 9/11. A. 3/10. L. lat. 26-27.

A posterior canine tooth; jaws with four canine teeth anteriorly. Cheek with four series of scales; tubules of the lateral line branched; the scaly sheath of the dorsal and anal fins low. Caudal fin convex, with the lobes not produced. Rose-coloured olive, with six or seven indistinct brown cross-bands; six brown streaks radiate from the eye; a deep blue spot between the first and third dorsal spines and at the root of the pectoral fin superiorly;

a blue band along the middle of the dorsal and anal fins; a brownish band across the middle of the caudal fin.

Australia (Bleeker).

705. LABRICHTHYS BLEEKERI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 148.

D. 9/11. A. 3/10. L. lat. 25. L. transv. 3/7.

Two posterior canine teeth; two anterior canines in each jaw, the lateral teeth decreasing in size backwards with an inner series of smaller and blunter teeth. The opercles are scaly, there are two series of scales on the cheeks, and the whole head is rough and covered with irregular lines which radiate from the orbit. The height of the body is three times and one-third in the total length; the length of the head four times; eye four times and one-third in the length of the head; the dorsal scales do not extend on the base of the fin; caudal fin rounded, of thirteen long rays; pectorals large. Greenish above, dark blue beneath; a broad black band from the eye to the operculum; cheeks covered with small white spots; throat purple, spotted with white; the scales of the body bordered with carmine. Fins green: the spinous dorsal with a red tinge, the soft spotted with purple and bordered with red; the caudal is orange, spotted with carmine; the anal has three series of large, round carmine spots; the ventrals are pink; the pectorals yellow.

Port Phillip. Length ten to twelve inches.

706. LABRICHTHYS RICHARDSONII, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 150.

D. 9/11. A. 3/11. L. lat. 26.

A posterior canine tooth; the other teeth as in the last species. Three series of scales on the cheek; the surface of the head very rough; the dorsal scales do not extend on the base of the fin. Colour light bluish-green, with a black spot on the extrmeity of the operculum, and two broad transverse bands on the body, one from the third or fourth dorsal spine, the other behind; a few dark spots on the fifth, sixth, and seventh dorsal spines; caudal fin with a posterior orange margin.

Port Phillip. Length fourteen inches.

707. LABRICHTHYS EPHIPPIUM, Gunth.

Ann. and Mag. Nat. Hist, 1863, Vol. XI., p. 116.

Labrichthys vestita, Casteln., Proc. Zool. Soc., Victoria, Vol. I., p. 151.

D. 9/11. A. 3/10. L. lat. 27. L. transv. 3/10.

A posterior canine tooth. Cheek with three series of very small scales. Base of dorsal fin not scaly. Each tube of the scales of the lateral line with numerous branches. Coloration in a dried specimen: back violet-olive to the end of the spinous dorsal fin; head, belly, and tail reddish, the latter with a broad violet-olive band between the posterior halves of the soft dorsal and anal fins. A blackish spot behind the operculum; the pectoral, ventral, caudal, and spinous dorsal fins reddish or yellowish; the first with a black spot superiorly in the axil; the soft dorsal and the anal blackish-violet.

Port Phillip. Length seventeen inches.

This is not *Labrus ephippium* of Cuv. and Val., as Dr. Gunther seems to think.

708. LABRICHTHYS CUVIERI, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 53.

D. 9/11. A. 3/10. L. lat. 27.

No posterior canine teeth; a well formed inner series of teeth in the upper jaw. Profile of head not very convex; head rugose; cheeks with a narrow band formed of two series of scales; no scales on base of dorsal fin. Colour greenish, with two broad red transverse bands, the second nearly covering the posterior half of the body. The pectoral fins are of a brilliant orange yellow; the spinous dorsal is of the same colour, and the soft is dark and almost black; the caudal olive.

Hobart Town.

709. LABRICHTHYS BOSTOCKII, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 53.

D. 9/11. A. 3/10. L. lat. 25.

Like *L. tetricus*. A small posterior canine tooth; two large anterior ones in each jaw; cheeks with two series of indistinct scales; head covered with minute tubercles; caudal fin truncate, the upper ray longer than the others; the dorsal and anal prolonged posteriorly; the arbuscles of the lateral line more complicated than in *tetricus*. Colour (in spirits) is dark purplish red; the fins are lighter; the base of the dorsal black.

West Australia. Length seven and a-half inches.

710. LABRICHTHYS EDELENSIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 137.

Allied to *L. punctulata;* scales of the operculum as large as those of the body; præoperculum almost naked, with one line of scales; the arbuscles of the lateral line are much ramified and cover the scales; no scales on the base of the dorsal fin; a posterior canine tooth; body more convex than in most of the genus, with the scales covered with strong transverse striæ. Colour uniform brown, with the fins yellow; no spots.

Western Australia. Length eight inches.

711. LABRICHTHYS UNICOLOR, Casteln.

Researches on the Fishes of Australia, p. 37.

"The upper profile very little curved, cheeks without scales, covered like the head with very strong granulations; operculum with three series of large scales; one posterior canine tooth, and two others in front of each jaw; scales of the body covered with strong longitudinal striæ; those of the lateral line having a large fan-like arbuscule which covers the greatest part of them and presents no transverse reticulation; caudal truncated; colour of a dark brown rubyish tint." (Castelnau.)

West Australia. Length eight inches.

712. Labrichthys rubra, Casteln.

Researches on the Fishes of Australia, p. 37.

"Cheeks covered with strong granulations, but without scales; one posterior canine tooth; two anterior ones in each jaw; caudal fin slightly rounded; no scales on base of dorsal; scales of lateral line covered by very large arbuscules, formed of a fan-like series of concentric lines; these do not extend to the base of the scale, which is covered with strong granulations; lips very long, the upper one when extended, covering entirely the teeth. The general colour (in spirit specimens) is of a fine brick-red; on the lower parts of the body the centre of the scales is of a silvery white; the eye is surrounded by indistinct and concentric obscure lines, and numerous spots of similar hue are seen on the head and back; in some specimens these form indistinct transverse bands, four or five in number; the dorsal fin is scarlet, with rounded dark spots; the caudal has a yellow tinge; the anal red, with the rays marked with white spots, sometimes intermixed with black ones; the pectorals of a beautiful orange; none of the fins have a coloured margin." (Castelnau.)

Swan River. Length eight inches.

713. Labrichthys convexa, Casteln.

Researches on the Fishes of Australia, p. 38.

Body elevated behind the head, the upper profile very convex. No posterior canine tooth; two strong canines in front of each jaw, the other teeth long and sharp; cheeks with four series of very large scales, the two external very strongly granulated; operculum scaly; scales of the body very large, with strong longitudinal striæ, and other much finer transverse ones; scales of tail more elongate; arbuscules of the lateral line very large, expanded, and intricate. Colour purplish, beneath lighter.

Swan River. Length seven inches.

714. LABRICHTHYS NIGROMARGINATA, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 35, pl. 3, fig. 3.

Port Jackson.

715. LABRICHTHYS FUCICOLA, Richards.

Proc. Zool. Soc., 1840, p. 26.—Voy. Erebus and Terror, p. 127, pl. 54, figs. 1-2.

B. 6. D. 9/11. A. 3/10. C. 14. P. 13. V. 1/5.

Like *L. tetricus*. Bones of the head less uneven; some small scales are scattered among the larger ones on the operculum; the cheek has four rows of small scales near the angle of the mouth, towards the temples three rows. L. lat. 27. Teeth larger than in *tetricus;* the canine tooth at the angle of the jaw curved; the caudal fin is rounded, the anal somewhat arched; the soft dorsal is a little higher anteriorly than posteriorly. Colour dark plum-purple, towards the belly buff, with four pale spots on the back; one on the the suprascapular, another near the eighth spine of the dorsal fin, and the other two at the base of the soft dorsal. Some faint curved lines are traceable about the cheek and nose; a dark bar crosses the pectoral fin at a-third of its length, and at its base there is a black spot. Length fourteen inches.

Tasmania and South Australia.

716. LABRICHTHYS DORSALIS, *n. sp.*

D. 9/11. A. 3/10. L. lat. 25. L. transv. 3/8.

Body much compressed; snout rather pointed, its length from the eye equal to two diameters of the orbit; posterior canine teeth very small; anterior—two in the upper jaw and four in the lower, the two middle ones received between those of the upper jaw. Head rugose; four series of scales on the cheek below the eye, reduced to two series of larger scales behind the eye; scales on the operculum large; those on the body larger, with many radiating striæ; tubes of lateral line long, with two branchlets at the extremity on the body, and without branchlets towards the tail; caudal fin subtruncate; dorsal scales extending on to base of dorsal fin. Colour (in spirits) uniform dull reddish-brown, with the outer half of the fins much paler; a black blotch between the second and third dorsal spines.

Port Jackson. Length seven inches.

717. LABRICHTHYS LABIOSA, *n. sp.*, (Plate I., fig. 2.

D. 9/11. A. 2/10. L. lat. 25.

Oblong, the length of the body about one-fourth of the total length. Snout rather short; lips fleshy; mouth protractile; a posterior canine tooth, the others strong and conical, the anterior pair in each jaw longer; three series of scales on the cheek; scales of the lateral line with the tubes six-branched; caudal fin truncate, with the angles rounded, and the rays clothed with elongate scales to near the apex. Spines and rays of the dorsal and anal fins soft, and enveloped in a dense membrane without scales. Colour (in spirits) yellowish, with a more or less distinct brown stripe from the eye to the tail and another (broader) from the operculum to the tail, there are also some indistinct cross-bands on the body. The dorsal fin has a blackish blotch near its commencement and a series of round black spots along its base.

Port Jackson.

718. LABRICHTHYS MACULATA, *n. sp.*

Height of body one-fourth of the total length, snout little longer than the diameter of the eye; teeth acute, the two anterior of the lower jaw received between the anterior two of the upper. Head rugose; two series of scales on the cheek; scales of the lateral line twenty-five, the tubes divided at their extremity into three or four branchlets until near the tail; scales extending on the dorsal and caudal fins. Colour (in spirits) reddish-brown, with a distinct black spot on each scale on the operculum and upper part of the body: the spots becoming smaller below the middle, and disappearing towards the belly. A large black blotch across the upper part of the tail behind the dorsal fin; the anal fin is margined with black.

King George's Sound. Length four inches.

719. LABRICHTHYS MELANURA, *n. sp.*

Height of body about a-third of the total length; snout rather pointed; eye small; a strong posterior canine tooth; anterior ones moderate; five series of scales on the cheek below the eye; scales on the operculum as large as those on the body. L. lat. 26; the under profile of the body more convex than the upper; scales extending a little on the dorsal fin, and for quite one-third on the caudal; the latter is truncate. Colour (in spirits) yellowish, with a brownish centre to every scale, darkest above the lateral line; three parallel dark streaks extend from the hinder part of the orbit to the end of the operculum; a small black spot on the upper part of the root of the pectoral fin; a broad brownish band occupies the second third of the caudal; a faint trace of a dark bank on the dorsal and anal fins, and a dark spot on the second and third spine of the former.

Port Jackson. Length six inches.

720. LABRICHTHYS RUBICUNDA, *n. sp.*

D. 9/11. A. 3/10. L. lat. 25.

Height of body about one-fourth of the total length; head slightly convex and swollen looking between and in front of the eyes; lips large; teeth strong and acute, two posterior canines on each side, numerous small asperities on the head; four series of small scales on the cheeks under the eyes; tubules of the lateral line much branched with long foot stalks; caudal fin subtruncate, the lobes very slightly produced. Colour (in spirits) yellowish-red, with the basal portion of all the scales of a brilliant pinkish-red, with the appearance of a few paler or pearly longitudinal stripes; the fins are paler; a deep bluish-black patch on the back at the base of the three last dorsal rays, and a trace of another spot behind it on the free part of the tail. Length nine inches.

King George's Sound.

Genus TORRESIA, Castelnau.

Body compressed, oblong, covered with large scales; cheek and opercles scaly; præoperculum serrated; dorsal fin with thirteen spines.

Australia.

721. TORRESIA AUSTRALIS, Casteln.

Researches on the Fishes of Australia, p. 36.

D. 13/7. A. 3/10. L. lat. 28.

Convex profile; height of body twice and two-thirds of the length (exclusive of caudal fin); and about equal to the length of the head; the diameter of the eye is one-fourth of the length of the head; teeth equal, of moderate size, and in a single series; four canines in the upper jaw and six in the lower; the two front ones of the upper jaw much the largest; no posterior canine teeth. Colour olive-green; head with three abbreviated, longitudinal blue stripes, bordered with black; a large round black blotch on the back at the end of the spinous dorsal fin. Length four and a-half inches.

Cape York.

Genus CHEILINUS, Lacep.

Body compressed, oblong, covered with large scales; lateral line interrupted; cheeks with two series of large scales; præoperculum entire; teeth in a single series, two canines in each jaw, not bent outwards; no posterior canine tooth; lower jaw not produced backwards. Dorsal spines sub-equal in length; the third anal spine longest.

Tropical seas of India, China, and Polynesia.

722. CHEILINUS OXYRHYNCHUS, Bleek.

Atl. Ichth. tab. 28, f. 2.—Gunth., Cat. Fishes IV., p. 133.—Casteln. Researches on the Fishes Australia, p. 40.

D. 9/10. A. 3/8. L. lat. 23.

The height of the body is less than the length of the head, and a little more than one-fourth of the total length; the depth of the head is contained once and three-fifths in its length; snout produced, conical, with the jaws equal; tubules of the lateral line simple. Caudal fin rounded. Yellowish-olive (in spirits); snout without markings; reticulated brown lines on the hinder half of the head, on the body, and on the soft portions of the vertical fins; suboperculum crossed by several brown lines; two irregular blackish blotches on the tail; dorsal fin with a blackish spot between the first and second spines.

Cape York. Length eleven inches.

723. CHEILINUS CHLORURUS, Bl.

Gunth., Cat. Fishes IV., p. 32.—Bleek., Atl. Ichth., tab. 27, f. 3.

Cheilinus guttatus, Bleek., Casteln., Res. Fishes Aust. p. 40.

D. 10/9. A. 3/8. L. lat 22.

The height of the body is a little more more than one-third of the total length; snout subconical; canine teeth of moderate size. Caudal fin rounded, with the lobes slightly produced in adult specimens. Tubules of the lateral line moderately branched. Greenish-brown: head with round yellow spots, body with series of smaller dots. The spinous dorsal fin brownish, with red margin, and black dots on the spines; the soft dorsal red; *anal and ventral with numerous, very small yellow dots;* caudal green, yellow spotted.

Cape York. Length eight inches.

724. CHEILINUS AURANTIACUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 70.

D. 9/11. A. 3/10. L. lat. 23. L. transv. 3/7.

Body rather elongate and compressed, the height three times and three-quarters in the total length; head four times and one-third in the same; eye four times in the length of the head. Head rather concave; two rows of scales on the cheek; radiant and reticulated round the eye and præoperculum; canine teeth rather long; snout pointed, not longer than the eye; the lower jaw longer than the upper; caudal fin large, formed of four long and five or six shorter rays. Colour (in spirits) orange with the back carmine; the dorsal and anal fins yellow, with a broad external black band and a series of feeble, obscure spots near the body; the space between the first and second dorsal spines is black, and the sides of the caudal fin are obscure, there are also traces of brown spots on the back, and on the head round the eyes; the ventral fins have their first half orange, the other black; the pectorals are entirely of a fine reddish-orange.

South Australia (Castelnau).

Genus CHEILOLABRUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 345.

North-east Australia.

725. CHEILOLABRUS MAGNILABRIS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 345, pl. 16, fig. 2.

Darnley Island (Chevert Exp.)

Genus HEMIGYMNUS, Gunth.

Body compresseed, oblong, with scales of moderate size; cheek rather high. Opercles naked, cheek with a stripe of very small scales; præoperculum not serrated; lateral line continuous. Teeth in the jaws in a single series, two canines in each jaw anteriorly, the lower pair received between those of the upper; generally a posterior canine.

From the Red Sea to the North Coast of Australia.

726. HEMIGYMNUS MELANOPTERUS, Bleek.

Atl. Ichth. Lab., tab. 45, f. 2-3.—Gunth., Cat. Fishes IV., p. 139.

Tautoga melapterus, Richards., Ann. and Mag. Nat. Hist. 1843, XI., p. 358.

D. 9/11. A. 3/11. L. lat. 29. L. transv. 5/14.

A posterior canine tooth, hidden by the skin. Lips very thick, with folds; the lower lip notched anteriorly, each lateral part pendent, like a wattle. Cheek with a band of small scales. Back and sides, between the vertical fins, brownish, abdomen and thoracic region yellowish; a blackish blotch behind the orbit; dorsal and anal fins with a light margin and with a bluish intramarginal band, edged with darker.

Port Essington. Endeavour Reef.

727. HEMIGYMNUS BLEASDALII, Casteln.

Researches on the Fishes of Australia, p. 38.

D. 9/10. A. 3/10. L. lat. 24.

A short posterior canine tooth; the head and cheeks are rough but without scales; the height of the body is one-third of the length; the caudal fin not included; the tubules on the lateral line are much branched, nearly covering the whole scale; caudal fin rounded. General colour green, with numerous crimson spots on the body, but not on the head; the opercle is whitish; the lower parts are pink, with a large rounded silvery spot on each scale; the dorsal fin is red with the spines spotted with brown, the soft portion has its external half green; caudal green; anal similar to soft dorsal; ventrals white; pectorals of the same colour, with the outer half pink.

South Australia.

Genus STETHOJULIS, Gunth.

Body compressed, oblong, covered with scales of moderate size; head entirely naked; lateral line not interrupted; scales on the thorax as large as, or larger than, those on the side of the body. A posterior canine tooth. Dorsal spines nine.

Indian and Pacific Seas.

728. STETHOJULIS STRIGIVENTER, Benn.

Gunth., Cat. Fishes IV., p. 140.—Bleek., Atl. Ichth. Lab., tab. 43, fig. 1.

D. 9/11. A. 2/11. L. lat. 26. L. trans. 2/9.

The height of the body is one-fourth of the total length, the length of the head two-sevenths; caudal fin rounded; ventral rather short. Greenish: *lower parts of the sides with several yellow longitudinal lines* and with some black dots; a brownish band from the mouth below the eye to the operculum; a black dot at the base of the penultimate dorsal ray; sometimes a small black spot on the base of the caudal fin.

Low Island (Chevert Exp.)

Genus PLATYGLOSSUS, Bleek.

Body compressed, oblong, covered with scales of moderate size (L. lat. 30. or less); head naked; lateral line not interrupted;

scales on the thorax smaller than those on the body. A posterior canine tooth; none of the anterior canine teeth are bent outwards and backwards. Dorsal spines nine.

Tropical Seas.

729. PLATYGLOSSUS DUSSUMIERI, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 113.

Halichæres nigrescens, Bleek., Atl. Ichth. Labr., p. 118, tab. 37, f. 4.

D. 9/12. A. 3/12. L. lat. 29. L. transv. 3/10. Vert. 10/15.

The height of the body is two-sevenths to two-ninths of the total length, the length of the head one-fourth. Caudal fin rounded; dorsal spines rather slender; the first ventral ray produced. A bluish-black yellow edged ocellus between the fifth and seventh dorsal spines; corners of the caudal fin broadly yellow. Brownish-green, with eight or nine dark cross-bands on the back; pectoral fin with a bluish-black spot in the axil; dorsal and anal fins with one or two series of large, round, yellow spots along the basal half.

Port Darwin (Macl. Mus.)

My specimens have none of the bands on the back, mentioned above, nor is there any trace of yellow spots on the dorsal and anal fins, so that I may be wrong in ascribing them to this species, but the colours of all these Labroid fishes are so completely effaced by spirits, that no dependence can be placed on marking or colouring.

730. PLATYGLOSSUS IMMACULATUS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 363 pl. 10, fig. 1.

Port Darwin.

731. PLATYGLOSSUS MINIATUS, Cuv. & Val.

Gunth., Cat. IV., p. 150.—Bleek., Atl. Ichth. Labr., p. 114, tab. 41, fig. 5.

D. 9/11. A. 3/11. L. lat. 28. L. trans. 2/9.

The height of the body is equal to the length of the head, and rather less than one-fourth of the total length. Caudal fin rounded. Red: most of the scales along the middle of the sides with a blackish spot; six blackish spots along the back; sides of the belly with numerous crescent-shaped vertical streaks; a deep violet spot behind the eye; a curved silvery streak from the angle of the mouth to below the orbit, bent downwards over the operculum to the interoperculum. Dorsal fin with numerous, oblique, undulated violet lines, descending obliquely backwards, and generally with two black ocelli between the two anterior spines and behind the first ray; anal dotted all over with black; caudal rays with small red dots.

Australia (Macgillivray).

Genus Pseudojulis, Bleek.

Body compressed, slender, covered with scales of moderate size (L. lat. less than 30); head naked; lateral line not interrupted; scales on the thorax smaller than those of the body. No posterior canine tooth; anterior teeth conical. Dorsal spines nine.

Indian and Australian Seas; California.

732. Pseudojulis lineata, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 138.

D. 9/12. A. 3/12.

The height of the body is contained a little over four times in the total length, and is about equal to the length of the head; the teeth are conical and directed forwards, two long ones in front; caudal fin rounded and scaly on the basal half; the pectorals have thirteen rays; the ventrals are pointed. The general colour (in spirits) is an uniform light brown, with numerous longitudinal and regular lines of a darker colour, extending all along the body;

the dorsal and anal fins appear to have been yellow, on the first of these there is a narrow black spot behind the first spine. Length over eight inches.

West Australia.

733. Pseudojulis maculifer, Casteln.

Researches on the Fishes of Australia, p. 35.

D. 9/11. A. 2/11. L. lat. 31.

The height of the body is three times and two-thirds in the length, exclusive of the caudal fin, the length of the head twice and three-fourths in the same; diameter of the eye one-fourth of the length of the head; the lateral line consists of twenty-four scales before its deflection, and is formed of a succession of small ridges which are bifid posteriorly. Colour yellowish-white: on the head a round spot behind the eye, three bands—one oblique before the eye and two angular on the cheeks—the end of the operculum, and a few spots on the top of the head, black; the body has two very broad nebulous longitudinal bands with a black spot at the base of the pectorals and another between the first and third dorsal rays. Length three and a-half inches.

Queensland.

Genus Julis, Cuv. & Val.

Body compressed, oblong, covered with scales of moderate size; head entirely naked; lateral line not interrupted; snout of moderate extent, not produced; no posterior canine teeth. Dorsal spines eight.

Tropical and subtropical seas.

734. Julis aneitensis, Gunth.

Gunth., Cat. Fishes IV., p. 183.

D. 9/11. A. 3/11. L. lat. 28. L. transv. 3/9.

"The height of the body equals the length of the head, and is somewhat more than one-fifth of the total length; the outer caudal rays are produced into filaments; the length of the ventral fins is two-thirds of that of the pectoral in half grown specimens, three-fourths in adults. Colours of dried specimens: anterior part of back and thorax brownish-olive; body greenish, each scale with a vertical streak; head violet, with three green bands edged with darker: the upper from the eye to the origin of the lateral line, the middle from below the eye to the hind part of the suboperculum, the lower from the angle of the mouth to the suboperculum; sometimes a fourth on the interoperculum. Pectoral fin with a broad, oblique, black band across its posterior half, and with a black spot in the axil; a black spot beteen the second and third dorsal spines; two fine brown lines run along the whole length of the dorsal fin, one along its base, the other above the middle of its height; they are the edges of a broad, brownish band running along the middle of the fin; anal with a similar line running nearer to its base than to its margin, and separating the brown basal portion from the green outer one; a yellow band along the upper and lower margins of the caudal." (Gunther).

North-east Australia (Rayner).

735. Julis Adelaidensis, Casteln.

Researches on the Fishes of Australia, p. 35.

The height of the body is one-fourth of the length exclusive of the caudal fin, the length of the head is three times and one-third in the same. Dorsal spines and rays very much alike; caudal fin rounded; lateral line about 50. Body of a beautiful pink colour, silvery beneath; head pearly white with its upper parts of an obscure blue; on the anterior part of the cheek are three or four narrow blue lines, bordered with black, and directed obliquely downwards; dorsal fin yellowish, with a broad longitudinal pink band extending on all its length higher than the width of the fin, the portion of this band on the three first spines is black; caudal without spots; anal with the rays pink. Length nine inches.

South Australia.

Genus CORIS, Lacep.

Body compressed, oblong, covered with small scales (L. lat. 50 or more); head entirely naked, lateral line not interrupted; dorsal spines nine.

All warm seas.

736. CORIS AYGULA, Lacep.

Gunth., Cat. Fishes IV., p. 201.

D. 9/12. A. 3/12. L. lat. 60-65. Vert. 9/16.

The height of the body equals the length of the head, and is contained thrice and three-fourths in the total length. A prominent hump on the nape, more developed in large specimens. Posterior canine tooth small, hidden, sometimes absent. The upper lip broad with folds, the lower not continuous with that of the other side, pendent. The anterior dorsal spine produced; caudal fin subtruncate; ventral long, pointed. Black or blackish, sometimes with a light vertical band above the vent. Back and vertical fins with some blue dots. Three red angular cross-bands on the neck; edges of the præoperculum and operculum red; extremity of the operculum blue. Vertical fins with green margins. Dried specimens nearly uniform black.

Australia (Gunther).

737. CORIS AURICULARIS, Cuv. & Val.

Richards., Ann. and Mag. Nat. Hist., 1843, XI., p. 422.—Gunth., Cat. Fishes IV., p. 206.

D. 9/12. A. 3/12. L. lat. 78. L. transv. 6/28.

The height of the body equals the length of the head, and is four times and a-half in the total length. No posterior canine tooth. Caudal fin rounded; dorsal and anal rather elevated, the spines being flexible and slender; the length of the posterior spines is two-thirds of that of the head. Uniform reddish-yellow (in a dried state); opercular point with a black spot, edged with white anteriorly; dorsal fin with a black spot between the two first spines and with numerous undulated brownish lines in its upper half; anal with three lines near the margin; caudal with irregular transverse bands.

West and South Australia.

738. CORIS LINEOLATA, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 206.

Described by Count Castelnau, Proc. Linn. Soc. N. S. Wales, Vol. III., p. 390.

Port Jackson. West Australia.

739. CORIS PALLIDA, *n. sp.*

D. 9/12. A. 3/12. L. lat. about 50.

Compressed, snout rather elongate, pointed; eye large; caudal fin somewhat rounded. Colour pale yellow, with some small black spots on the head, a few indistinct dark transverse marks on the sides, and a minute black spot on the second dorsal spine and another larger about the second ray. Fins colourless, immaculate.

Endeavour River. Length two inches.

Genus PSEUDOSCARUS, Bleek.

The upper jaw projecting beyond the lower; two or more series of scales on the cheek; dorsal spines more or less flexible; anterior teeth soldered together, arranged in quincuncial order; the dentigerous plate of the lower pharyngeal longer than broad. D. 9/10. A. 2/8. L. lat. 23-25.

Tropical Seas.

740. PSEUDOSCARUS RIVULATUS, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 222.—Bleek., Atl. Ichth. Labr., p. 44, tab. 9, fig. 3.

Two series of scales on the cheek, and two scales on the lower præopercular limb; the middle series composed of six scales. Upper lip broad. Jaws whitish, each with two small pointed teeth at the corner; teeth of moderate size. Anterior dorsal spine shortest; fourteen or fifteen pectoral rays; caudal fin subtruncate. Green, each scale with a reddish margin; snout and lower half of the head reddish, the former with rather numerous undulated green lines. A narrow green band along the base and margin of the dorsal fin, and an irregular band of the same colour, or series of spots along its middle. Anal fin green, lighter towards the margin, which is broadly edged with dark green. Caudal with irregular green spots.

Cape Grenville (Chevert Exp.)

741. PSEUDOSCARUS FLAVOLINEATUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 346, pl. 16, fig. 3.

Cape Grenville (Chevert Exp.)

742. PSEUDOSCARUS NUDIROSTRIS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 346, pl. 17, fig. 1.

Cape Grenville (Chevert Exp.)

743. PSEUDOSCARUS OBSCURUS, Casteln.

Researches on the Fishes of Australia, p. 41.

"This sort belongs to the Division having two series of large scales on the cheeks; the teeth are white and well marked, and distinct on the edge. The general form is oblong; the height is contained three times in the total length without the caudal; the head is about equal to the height; the lateral line is marked by tubercles, almost all simple, and the others simply bifide at their extremity. The opercule is produced and very broad; the pectorals have fifteen rays; the caudal truncate; the eye is nearly twice and two-thirds in the length of the snout; colour of a dark purple (in spirits); a whitish blotch covers the chin; another is visible on the opercle, and a broad transverse one extends on the back behind the opercule; the fins are purple, without spots, as is also the snout. The length of specimen is about twelve inches."

"NOTA.—This sort seems to resemble the *Scarus nigricans*, of Ehrenberg (Cuv. & Val.), which is only imperfectly known. Cape York."

744. PSEUDOSCARUS MODESTUS, Casteln.

Researches on the Fishes of Australia, p. 41.

"Upper jaw projecting slightly beyond the lower; three series of scales on the cheek, the lower præopercular limb being entirely naked; teeth white, the two of the upper jaw strongly denticulated; those of the lower jaw distinct laterally by longitudinal lines in the laminated pieces. Form, oblong; the greatest height of the body contained rather more than four times and a-half in the total length of the fish; the upper profile of the head pointed; caudal rounded; fourteen pectoral rays; general colour pink, with the head yellow; no spots; fins white; length three inches. Adelaide."

"NOTA.—This sort would come in Dr. Gunther's Division with *Pulchellus* and *Harid*, but appears different from both. It is probably a young specimen."

745. PSEUDOSCARUS DUMERILII, Casteln.

Researches on the Fishes of Australia, p. 41.

"The teeth soldered together into a broad lamina. The large scales of the body and the two series of scales on the cheeks, place this fish in Dr. Bleeker's genus *Pseudoscarus*. Its jaws of a white colour, and its broad upper lip, place it in a small section which contains *Ghobban*, *Collana*, and a few other sorts from the Indian Archipelago. The height is contained four times and a-half in the total length; the head three times and two-thirds in the same; the diameter of the eye is four times in the length of the head; upper lip broad; no tooth at the angle; the edge of the præoperculum is finely denticulated; the lateral line is strongly curved over the pectoral, and runs over thirty-six transverse series of scales; the scales over the base of the caudal are pointed; the dorsal has twenty-one rays, the two last rather prolongated; the caudal is pointed, of twelve long rays, the central ones being the longest; the anal is rather large, of twelve rays, the two last rather prolongated. The general colour is of a pinkish-brown, with the back purple; the lower parts pink; the sides appear to have been marbled with brown; fins light yellow. One single specimen, four and a-half inches long. Adelaide."

746. Pseudoscarus Richardsonii, Casteln.

Researches on the Fishes of Australia, p. 42.

"General form rather short; upper profile convex; height less than twice and two-thirds in the length without the caudal; two series of scales on the cheeks; the lower row composed of six; lateral line marked by a series of nearly simple tubes. General colour of an olive-green; on the cheeks a large lilac blotch, extending over the throat; this and the lower part of the opercles covered with oblong, narrow, irregular pink spots, bordered with dark brown; these form two irregular, transverse lines on the chin; teeth yellow; a transverse blotch, light colour, on the sides, behind the end of the pectorals; posterior part of the tail flesh colour; dorsal, caudal, ventrals, and anal flesh colour; the dorsal has a dark violet longitudinal line on its upper part, another near its base, and between these there is a series of circles, the centre of which is yellow; the outer third of the anal is yellow; pectorals large, dark, almost black, with the two anterior fins yellow; a very large and pointed free scale at the base of the pectoral;

caudal emarginate; the scales behind the eye strongly granulate; thirteen rays to the pectorals. Length thirteen inches and a-half. Cape York."

747. PSEUDOSCARUS VIRIDESCENS, Casteln.

Researches on the Fishes of Australia, p. 42.

"This also enters division having two series of large scales on the cheeks; teeth white, with their edge well marked, and the separation of each tooth marked by a faint line on all its length. The general form of the body is short and inflated; the height of the body is twice and two-thirds in the total length without the caudal; or a little less than three times in the same with this fin; the head is contained over three times and one-third in the length (without caudal); the diameter of the eye is not quite twice and a-half in the snout; the pectorals have thirteen rays; the lateral line is marked by a succession of complicated arbuscules on its first half, and of more simple but irregular ones on its posterior part; caudal subtruncate. The general colour (in spirits) is green, becoming rather lilac on the cheeks and the lower part of the head; the dorsal, caudal, and anal appear to have been red; the other fins yellow. Length of specimen, eight inches. From Cape York."

Genus HETEROSCARUS, Casteln.

Upper jaw longer than the lower; teeth soldered together, forming a sharp cutting ridge on both sides, with a median suture in the upper and none in the lower jaw. Scales large; fourteen or fifteen stiff dorsal spines; head naked, porous, cheeks dotted with imbedded and impressed non-imbricate scales; large scales on the operculum; lateral line continuous.

East and South Coasts of Australia.

748. HETEROSCARUS FILAMENTOSUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 74.

D. 15/11. A. 2/12. L. lat. 29. L. transv. 12.

Form oblong, oval, rounded in front, gibbous on the back; height of body three times and one-eighth in the total length, length of head nearly four times in the same, diameter of eye five times in the length of the head; two rows of large scales on the operculum, the first of six or seven, the second four or five scales. Operculum striated; the two first dorsal spines ending in long filaments; caudal fin truncate; pectorals large, rounded, of fourteen rays; ventrals united at the base, smaller than the pectorals, with one long slender spine and four rays. Colour (in spirits) reddish pink, becoming light brown on the back, with faint traces of three or four irregular transverse brown bands, which are interrupted a little under the lateral line, and reappear as blotches on the belly. The head is brown above and pink below and on the sides; a narrow well defined blue stripe, bordered with black, extends from the eye to the scaly part of the operculum; a second runs below the eye from the front of the mouth; a third extends from the angle of the mouth to the serrated part of the præoperculum. The spines of the dorsal fin are white, but the membranes and filaments black; the rest of the fin is yellow, with a broad dark blue stripe nearer the margin than the base; the anal and ventral fins similar; the caudal and pectorals are of a fine yellow.

South Australia. Length seven inches.

749. HETEROSCARUS MODESTUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 75.

D. 14/10. A. 2/11. P. 13. L. lat. 32. L. transv. 13.

Shorter than *H. filamentosus*. Cheeks covered with large thin, flat scales; minute scales on the upper limb of the præoperculum, which is striate-serrate; the operculum is naked on its anterior half and covered with pores, on its posterior portion there are three series of large scales, behind which again it is naked and striated. The first few spines of the dorsal end in filaments; the caudal fin is truncate; ventrals united at the base, of one spine and four rays· Colour (in spirits) of a fleshy pink, with the sides of the head brilliant; no trace of coloured stripes on the head; the fins are yellow, with a black tinge on the anterior and posterior parts of the dorsal; the caudal has four transverse black bands; the anal with a broad, faint, black stripe along the middle, and the second half of the ventral is of the same colour.

South Australia. Length six inches.

750. HETEROSCARUS CASTELNAUI, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 36, pl. 5, fig. 2.

Port Jackson.

Genus ODAX, Cuv. & Val.

Cheeks and opercles scaly; scales of the body small or rather small; lateral line continuous; Snout conical. The edge of each jaw is sharp, cutting, without distinct teeth anteriorly; the dentigerous plate of the lower pharyngeal triangular, much broader than long.

Coasts of Australia and New Zealand.

751. ODAX BALEATUS, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 240.

"*Kelp Fish*" of Tasmania.

Odax algensis, Richards., Ann. and Mag. Nat. Hist., 1840, p. 26.

D. 16-17/12. A. 3/12. L. lat. 39. L. transv. 4/13. Vert. 19/17.

Præoperculum finely serrated posteriorly. Sides of the head with red and blue streaks; dorsal and anal fins with dark purple edges and with many very short, slender, oblique bars, regularly crossing the rays. Specimens in spirits show a dark band running from the snout, through the eye, to the curve of the lateral line, where it disappears, or is replaced by a series of indistinct dark blotches.

Tasmania. Port Jackson.

752. ODAX FRENATUS, Gunth.

Gunth., Cat. Fishes IV., p. 241.

D. 31. A. 13. L. lat. 42. L. transv. 3/11.

Præoperculum entire; dorsal fin nearly even; a dark brown band from the snout, through the eye, to the end of the operculum; a silvery band below the brown one, and continued on to the tail, where it is gradually lost; a blackish spot anteriorly on the dorsal fin.

West Australia.

753. ODAX RICHARDSONII, Gunth.

Gunth., Cat. Fishes IV., p. 241.—Castelnau, Proc. Zool. Soc., Victoria, Vol. I., p. 152.

"*The Stranger*" of the Melbourne Fishermen.

D. 17/13. A. 3/11-12. L. lat. 60. L. transv. 7/20.

Præoperculum finely serrated posteriorly; none of the fin rays produced; dorsal fin even; caudal rounded. Colour of fresh specimens green, or blue, or red, tinged with yellow, with six to eight rather obscure dark cross-bands; belly white; sides of head with blue and yellow bands.

Port Phillip.

754. ODAX SEMIFASCIATUS, Cuv. & Val.

Gunth., Cat. Fishes IV., p. 241.—Castelnau, Proc. Linn. Soc., N.S. Wales, Vol. III., p. 390.

"*Rock Whiting*" of the Sydney Fishermen.

D. 18/12. A. 2/11. L. lat. 63. L. trans. 15-20.

Very much like *O. Richardsonii*, but with the præoperculum entire. The colour is sky-blue with a golden spot on each scale, or green with the belly white, and with transverse black spots on the back.

Port Jackson. Length fourteen inches.

755. ODAX RADIATUS, Quoy. & Gaim.

Gunth., Cat. Fishes IV., p. 242.

Odax lineatus, Richards., Voy. Erebus and Terror, p. 133, pl. 60, fig. 1-5.

D. 30/31. A. 13. L. lat. 44. L. transv. 4/10.

Præoperculum entire; the first dorsal spine slightly produced; caudal fin with the middle prolonged, rhombic. Back violet, belly orange-coloured, a carmine red band along the side of the back; a reddish violet line commences behind the eye, and is forked at the origin of the lateral line, one part running above; the other below, the convex portion of the lateral ine; a single reddish-violet line runs along and above its straight portion. Sides of the head with blue longitudinal lines; operculum with a dark green spot. Dorsal fin with greenish, darker-edged. longitudinal lines, and with a blackish band within its margin; the anterior spine dark; a black band, edged with red posteriorly occupies the anterior third of the base of the fin. Caudal fin blackish posteriorly; anal yellowish; pectoral rose-coloured; the outer ventral ray produced, with a red, black-edged longitudinal band.

West Australia.

756. ODAX OBSCURUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 154.

D. 28. A. 15. P. 14. C. 13. L. lat. 45.

Snout not so produced as in *O. Richardsonii*, and the scales much larger. Præoperculum very finely denticulated. General colour purplish-black, the upper part of the head lighter, the sides of the head with numerous narrow, flexuous red lines; eye red, with a broad external blue circle; dorsal and anal fins of a light blue colour, covered with oblique scarlet lines, border black; the other fins black.

Port Phillip.

757. ODAX PUSILLUS, Casteln.

Proc. Zool. Soc., Vict., Vol. II., p. 72.—Researches on the Fishes of Australia, p. 36.

D. 28. A. 15. P. 15.

Height of body one-sixth of the total length. Scales large; præoperculum ciliated; caudal fin pointed, the middle rays being the longest. Colour lilac, with a faint but broad band from the mouth, over the eye, to the base of the caudal fin.

South Australia. Length three inches.

758. ODAX WATERHOUSEI, Casteln.

Neodax Waterhousei, Casteln., Res. Fishes Aust. p 37.

D. 27. A. 14.

Body elongate; eye rather large; præoperculum serrated; dorsal fin of very flexible rays. Caudal fin rounded; scales moderate; several series of scales on the cheeks. General colour (in spirits) yellowish-pink, with a faint longitudinal and rather obscure streak on each side of the body, and of the head; fins yellow.

South Australia. Length about two inches.

Count Castelnau formed the genus *Neodax* for this species, and others of the genus *Odax*, having a serrated præoperculum and soft flexible dorsal fin. I scarcely think the genus is necessary.

759. ODAX BRUNNEUS, *n. sp.*

D. 28. A. 14. L. lat. 30.

Height of body one-fifth of the total length; præoperculum rounded, and finely crenulated; caudal fin rounded; ventrals close together, the space between covered by two long, pointed scales. Colour chocolate-brown, the fins redder, five or six series of small spots on the dorsal fin.

Port Jackson. Length three and a-half inches.

Genus OLISTHEROPS, Richards.

Head entirely naked; scales of moderate size; lateral line continuous; snout of moderate extent; dorsal spines numerous, flexible. Teeth as in *Odax*.

Australia.

760. OLISTHEROPS CYANOMELAS, Richards.

Ann. and Mag. Nat. Hist., 1851, p. 291.—Gunth., Cat. Fishes IV., p. 243.

D. 18/10. A. 3/10. L. lat. 48. L. transv. 7/14.

The height of the body is contained five times and a-half in the total length. Blackish-green: a bluish streak along the upper and lower margins of the caudal and along the upper margin of the pectoral fins.

Melbourne. King George's Sound.

This species is subject to very great variations in colour, seeming to change at different seasons. The following species I believe to be distinct, though placed by Count Castelnau as a synonym of *O. cyanomelas*.

761. OLISTHEROPS BRUNNEUS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 36, pl. 5, fig. 1.

Port Jackson.

Genus SIPHONOGNATHUS, Richards.

Head and body very elongate; snout long as in *Fistularia*, upper jaw terminating in a long, pointed skinny appendage;

operceles and cheeks scaly; scales of moderate size; lateral line continuous; dorsal spines numerous, flexible. Teeth as in *Odax.*

Australia.

762. Siphonognathus argyrophanes, Richards.

Proc. Zool. Soc. 1857, p. 238, pl. 6.—Gunth., Cat. Fish. IV., p. 244.

D. 24/22. A. 14. L. lat. 105. L. transv. 3/12.

A brownish violet band on the median line of the back, another from the snout, through the eye, to the tip of the caudal fin, which is lanceolate, a silvery band along and below the brown lateral one.

King George's Sound. Length sixteen inches.

Order III. *ANACANTHINI.*

Vertical and ventral fins without spinous rays (Gadopsis excepted). The ventral fins, if present, are jugular or thoracic. Air-bladder, if present, without pneumatic duct.

Family I. GADOPSIDÆ.

A small portion of the dorsal and anal fins is formed of true spines. Ventrals jugular. Gill-openings wide.

Genus Gadopsis, Richards.

Body slightly elongate, covered with very small scales. Snout of moderate extent, obtuse, with the upper jaw overlapping the lower; cleft of the mouth of moderate width, small cardiform teeth in the jaws, on the vomer and the palatine bones. One dorsal, the spinous portion rather shorter than the soft; anal spines three; caudal distinct. Ventrals jugular, composed of a single bifid ray. Branchiostegals six; gills four, with a narrow slight slit behind the fourth; pseudobranchiæ present, glandular; gill-opening wide; gill-membrane not united. An air-bladder; pyloric appendages in moderate number.

Fresh-waters of Australia.

763. Gadopsis marmoratus, Richards.

Voy. Erebus and Terror, p. 122, pl. 59, fig. 6-11.—Gunth., Cat. Fishes IV., p. 318.

B. 6. D. 10-11/25-26. A. 3/18-19. V. 1.

The dorsal and anal fins are enveloped in thick skin; ventral longer than pectoral. Reddish-brown, marbled with darker.

Fresh-waters of New South Wales, Victoria, Tasmania, and South Australia.

Family II. LYCODIDÆ.

Vertical fins confluent into one, without any spines. Ventral fin if present, small, attached to the humeral arch, jugular; gill opening narrow; gill-opening attached to the isthmus.

Genus Blennodesmus, Gunth.

Body elongate, compressed, band-like, rudimentary scales being imbedded in the mucous integuments of the body. Lateral line rather indistinct. Eye of moderate size. Head compressed, with the snout pointed and lower jaw prominent. Small conical teeth in both jaws; palate smooth. Barbels none. Gill-opening and verticals as in the other genera of the family. Ventral fins reduced to two short filaments, jugular. No prominent anal papilla.

Australia.

764. Blennodesmus scapularis, Gunth.

Proc. Zool. Soc., 1871, p. 667, pl. 67, fig. a.

D. + C. + A. 50 + 9 + 40. V. 1.

The height of the body is one-twelfth of the length, exclusive of the caudal fin, the length of the head one-seventh. Interorbital space convex, much narrower than the eye, the diameter of which is one-fifth of the length of the head; snout pointed, compressed, rather longer than the eye. The maxillary extends beyond the front margin of the orbit. The vent is twice as distant from the extremity of the caudal as from the snout. The dorsal fin commences above the posterior half of the pectoral, and is lower than the body; caudal fin rounded. The anal commences immediately behind the vent. Pectorals half as long as the head. Ventrals close together, reduced to a pair of filaments, about as long as the eye. Body brownish, marbled with darker, sides of the head with small round yellowish spots; a black, yellow-edged ocellus in the scapulary region; an undulated yellowish line along the middle of the nape and head.

Port Mackay (Queensland). Length three inches.

FAMILY III. GADIDÆ.

Body more or less elongate, covered with small, smooth scales. One, two, or three dorsal fins, occupying nearly the whole of the back; rays of the posterior dorsal well developed; one or two anal fins. Caudal fin free from dorsal and anal, or if united, the dorsal with a separate anterior portion. Ventrals jugular, composed of several rays; or if they are reduced to a filament, the dorsal is divided into two. Gill openings wide; the gill-membranes generally not attached to the isthmus. Pseudobranchiæ none or glandular, rudimentary; an air-bladder and pyloric appendages generally present.

Cold and temperate seas of the Northern hemisphere, rare in the Southern.

Genus LOTELLA, Kaup.

Body of moderate length, covered with small scales. A separate caudal fin; two dorsal fins and one anal; ventral fins with a flat base, and composed of several rays. Teeth in the upper jaw in a band, with an outer series of larger ones. Vomerine or palatine teeth none. Chin with a barbel. Branchiostegals seven or six.

Western Pacific.

765. Lotella fuliginosa, Gunth.

Gunth., Cat. Fishes IV., p. 347.

D. 9. 50 A. 54. V. 9.

Head rather short and broad, one-fourth of the total length, and about as high as long; the snout is equal in length to the diameter of the eye and is obtuse; the maxillary extends beyond the vertical from the middle of the eye; barbel rather longer than the eye; nostrils close together, immediately in front of the eye. Interorbital space flat, its width being equal to the vertical diameter of the orbit. The teeth in the upper jaw form a band, with an outer series of widely set stronger teeth; lower jaw with a single series like the outer series of the upper. Body and tail compressed, the latter tapering posteriorly, so that its least depth is equal to one diameter of the eye; the two outer ventral rays produced into filaments, extending nearly to the vent. Uniform brown; fins blackish; ventral filaments white.

Port Jackson (Castelnau).

766. Lotella callarias, Gunth.

Ann. and Mag. Nat. Hist., 1863, p. 116.

"*Cod*" of Melbourne Fishermen.

D. 6. 65. A. 57. P. 22. V. 7.

Similar to *L. fuliginosa*, but with a shorter head, it being one-fifth of the total length (caudal fin excluded). The two outer ventral rays produced into a filament. Colour uniform brown. The ventrals with the filaments are as long as the pectorals; the barbel is not quite half the length of the head.

Port Phillip. Length nineteen inches.

767. Lotella marginata, *n. sp.*

D. 5. 56. A. 47. P. 21. V. 6.

"*Beardy*" of Fishermen.

The width of the head behind the eyes is about equal to its length, and considerably less than the height of the body below the first dorsal fin; the body tapers towards the tail which is much compressed before the fin and not higher than the diameter of the eye. Snout very obtuse and rounded, projecting beyond the mouth; the maxillary reaches to the vertical behind the posterior margin of the orbit; the barbel is about equal in length to nearly two diameters of the eye. Ventral fins much shorter than the pectorals, the two first rays white and produced into filaments; dorsal and anal fins pointed behind, caudal long and rounded. Scales very small. Colour uniform brownish, with the margins of all the fins white.

Port Jackson. Length twelve to twenty inches.

768. LOTELLA GRANDIS, Ramsay.

Proc. Linn. Soc. N.S. Wales, Vol. V., p. 464.

Wollongong.

Genus PSEUDOPHYCIS, Gunth.

Body of moderate length, covered with small scales. A separate caudal fin; two dorsal fins and one anal; ventral fins with an exceedingly narrow styliform base, but composed of several rays. Teeth in the jaws in a band, of equal size; no vomerine or palatine teeth. Chin with a barbel. Branchiostegals seven.

Australia and New Zealand.

769. PSEUDOPHYCIS BARBATUS, Gunth.

Ann. and Mag. Nat. Hist., 1863, p. 116.—Castelnau, Proc. Zool. Soc., Victoria, I., p. 162.

"*Rock Cod*" of the Melbourne Market.

B. 7. D. 9. 50. A. 55. V. 5. L. lat. 140.

Oblong, becoming compressed a little and tapering towards the tail; the head is broad and flat above; the snout rounded but not very convex, overlapping the mouth; the eye is large; the maxillary reaches the vertical from the posterior margin of the orbit; the barbel is very short and slender; the space between the snout and the anus is not quite so long as the anal fin; fins very scaly. Colour brownish above, whitish beneath, all or nearly all the fins have a blackish margin.

Port Phillip. Tasmania.

FAMILY IV. OPHIDIIDÆ.

Body more or less elongate, naked or scaly. Vertical fins generally united into one; no separate anterior dorsal or anal; dorsal occupying the greater portion of the back. Ventral fins rudimentary, or absent, jugular. Gill-openings wide, the gill-membranes not attached to the isthmus. Pyloric appendages none, or in small number.

Genus DINEMATICHTHYS, Bleek.

Body elongate, covered with very small scales. Eye small; one dorsal and anal fin not continuous with the caudal; each ventral reduced to a single filament, both close together and inserted at the throat, but behind the isthmus. Bands of teeth in the jaws, on the vomer, and on the palatine bones. Upper jaw scarcely longer than the lower; barbels none. Six branchiostegals; gill-opening very wide; pseudobranchiæ none. An anal papilla.

Indian Archipelago, California, and Australia.

770. DINEMATICHTHYS MIZOLEPIS, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX., p. 66.

D. 83. A. 69. C. 14. L. lat. 90.

Like *D. iluocæteoides*, but the scales much larger. Head naked; palatine teeth in a long stripe.

Cape York. Length two inches.

Genus GENYPTERUS, Philippi.

Body elongate, compressed, covered with minute scales. Eye of moderate size. Vertical fins continuous; ventral fins replaced by a pair of bifid filaments (barbels) inserted below the glossohyal. Teeth in the jaws, on the vomer, and the palatine bones; the outer series in the jaws and the single series of the palatines contain strong teeth. Lower jaw received within the upper. Vent situated at some distance behind the pectoral fin. Seven or eight branchiostegals; gill-openings wide; gills four, a slit behind the fourth; pseudobranchiæ and air-bladder present. Pyloric appendages in small number.

South Pacific Ocean. South Africa.

731. GENYPTERUS AUSTRALIS, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 164.
"*The Rock Line*" of the Melbourne Market.

Height of body eight times in the total length, diameter of eye seven times and a-half in the length of the head; the barbels in the young specimens one-third, and in the adults one-half of the length of the head. The teeth in the jaws are in two series, in the outer the teeth are large, thick, conical and wide apart; in the inner, smaller, closer and sometimes in pairs. The lateral line is well marked until the posterior eighth of the body; it is formed of several lines placed near one another and having a notch from distance to distance; the number of these notches is about forty-seven. The scales are small, the transversal lines numbering nearly three hundred; the pectoral fins are contained about twice and a-half times in the length of the head. Colour light lilac, the belly white; the body is covered with large marbled blotches, of irregular shape, confluent on the back and extending over the head. Eye silvery. Dorsal and anal fins marbled like the body, the margin of the first white, of the anal flesh-colour. Pectorals spotted.

Port Phillip. Length about two feet.

Genus TYPHLONUS, Gunther.

"Head large, compressed, with most of the bones in a cartilaginous condition; the superficial bones with large muciferous cavities not armed. Snout a thick protuberance, projecting beyond the mouth, which is rather small, inferior. Trunk very short, the vent being below the pectoral; tail thin, strongly compressed, tapering, without separate caudal. Eye externally not visible, reduced to a minute rudiment hidden below the skin. Bands of villiform teeth in the jaws, on the vomer and palatine bones. Barbel none. Ventrals reduced to simple filaments, placed close together on the humeral symphysis. Gill-openings very wide, the gill-membranes being but slightly united in front. Gills four; gill-laminæ rather short; gill rakers of moderate length. Scales thin, deciduous, small.

Pacific."

772. TYPHLONUS NASUS, Gunth.

Ann. and Mag. Nat. Hist., 1878, Vol. II., p. 21.

"The head of this most remarkable form is somewhat compressed, deep, as thick in the rostral as in the opercular portion; its length is more than one-fourth of the total. Protuberances formed by projecting portions of the cranium, occupy the upper and lateral surfaces of the head; and more especially, one in front and another on each side of the snout, are very conspicuous.

North-east of Australia in 2,440 fathoms, (Challenger)."

Genus APHYONUS, Gunth.

"Head, body, and tapering tail strongly compressed, enveloped in a thin, scaleless, loose skin. Vent far behind the pectorals. Snout swollen, projecting beyond the mouth, which is wide. No teeth in the upper jaw; small conical teeth in the lower, pluriserial in front, uniserial on the side. Vomer with a few rudimentary teeth; palatine teeth. Nostrils close together, small. No externally visible eye. Barbel none. Ventrals reduced to simple filaments placed close together, and near to the humeral symphysis. Gill-membranes not united. Four branchial arches, the posterior without gill-laminæ, the anterior with very short gill-rakers and rather short gill-laminæ. Head covered with a system of wide muciferous channels and sinuses, the dermal bones being almost membranaceous, while the others are in a semicartilaginous condition. Notochord persistent, but with a superficial indication of the vertebral segments, (as in some Leptocephaline forms).

Australian Seas."

773. APHYONUS GELATINOSUS, Gunth.

Ann. and Mag. Nat. Hist., 1878, Vol. II., p. 22.

"The head in the preserved specimen is compressed, rather deep, and enveloped in loose skin; especially on the upper side of its anterior half the skin forms a long, loose bag, which during life is probably filled with mucus. Transparent, colourless, like a *Leptocephalus*.

North-east Australia in 1,400 fathoms (Challenger)."

Genus FIERASFER, Cuv.

Body produced into a very long and tapering tail, naked. Eye moderate. Vertical fins continuous, very low; no ventrals; no barbels. Cardiform teeth in the jaws, on the vomer and the palatine bones, sometimes with canines; the teeth on the vomer form an oblong patch and are generally stouter than the others. Lower jaw received within the upper. Vent situated at the throat. Seven branchiostegals; gill-openings wide, the gill-membranes united below and not attached to the isthmus; gills four, a slit behind the fourth; pseudobranchiæ none; air-bladder present. No pyloric appendages.

Inhabitants of nearly all seas.

774. FIERASFER HOMEI, Richards.

Voy. Erebus and Terror, p. 74, pl. 44, figs. 7-18.—Gunth., Cat. Fishes IV., p. 382.

The length of the head is seven times and a-half or eight times in the total length; its width one half its length. Gill-openings of moderate width, the united gill-membranes leaving half of the isthmus uncovered. Vent a little in advance of the vertical from the root of the pectoral fin. Teeth small, cardiform; two larger ones anteriorly in the upper jaw and on the vomer; an outer series of stronger teeth along the side of the lower jaw. Dorsal fin very low, but distinct. Yellowish with some scattered darker dots on the back.

Torres Straits (Chevert Exp.)

Genus CONGROGADUS, Gunth.

Body elongate, compressed, eel-like, covered with very small scales; vertical fins united, long. Ventrals none. Cleft of the mouth moderate, with the lower jaw prominent. Jaws with a single series of small teeth, closely set; palate smooth. Branchiostegals six; gill-openings of moderate width, gill-membranes united below the throat, not attached to the isthmus; gills four, a slit behind the fourth; pseudobranchiæ well developed. Vent remote from the head. Air-bladder and pyloric appendages none.

Indian Archipelago and North Australia.

775. CONGROGADUS SUBDUCENS, Richards.

Gunth., Cat. Fishes IV., p. 388.

Machærium subducens, Richards., Voy. Erebus and Terror, pl. 44, figs. 1-6.

B. 6. D. 71. C. 10. A. 60-65.

The height of the body is three-fifths of the length of the head, which is contained six times and a-half to seven times in the total length. The dorsal fin commences above the end of the pectoral.

Each jaw on each side has more than forty small teeth. Body brownish, uniform or irregularly marbled or spotted; a black ocellus on the operculum; lower part of the cheeks with pearl-coloured spots; base of the dorsal and anal fins with bluish spots.

Port Darwin, Port Essington, and West Australia.

Count Castelnau described in "Researches on the Fishes of Australia, p. 43-44," a large Fish from Western Australia, which he refers with some doubt to the family *Ophidiidæ*. It cannot, however, possibly belong to this family, and the very defective condition of the specimen from which the Count manufactured the genus and species, leaves it a matter of great doubt as to its being even of the Order *Anacanthini*. I therefore omit it altogether from the Catalogue. He gave it the name of *Othos cephalotes*.

FAMILY V. MACRURIDÆ.

Body terminating in a long, compressed, tapering tail, covered with spiny, keeled or striated scales. One short anterior dorsal fin, the second very long, continued to the end of the tail, and composed of very feeble rays; anal like the second dorsal; no caudal. Ventral fins thoracic or jugular, composed of several rays. Pseudobranchiæ none; six or seven branchiostegals; air-bladder present. Pyloric appendages numerous.

Genus MACRURUS, Bl.

Scales of moderate size, keeled or spiny. Snout produced, conical; mouth inferior. Head with rough ridges; the suborbital ring forms a strong lateral ridge, joined with, and supporting the angle of the præoperculum, which has a very distinct ridge. Teeth in a band, villiform or cardiform, without larger ones in the outer series; palate smooth. Ventral fins below, or immediately behind or before the pectorals. A barbel.

All temperate seas.

776. MACRURUS AUSTRALIS, Richards.

Proc. Zool. Soc., 1839, p. 100.—Gunth., Cat. Fishes IV., p. 391.

D. 13. 88. A. 87. V. 7. L. lat. 130. L. trans. 4/15. Vert. 14/53.

Each scale with twelve or thirteen keels, and with the margin crenulated. The second dorsal ray smooth, extending beyond the origin of the second dorsal fin, if laid backwards. Vent situated behind the vertical from the last ray of the first dorsal. The projecting part of the snout trihedral, scarcely longer than the diameter of the eye, which is rather less than one-third of the length of the head.

Port Arthur, Tasmania. Length seventeen inches.

Genus CORYPHÆNOIDES, Gunner.

Scales of moderate size, spiny or smooth. Snout short, obtuse, obliquely truncated; cleft of mouth lateral. Head without prominent ridges; the suborbital ring is not joined to the angle of the præoperculum, nor is the latter supported by it. Præopercular angle with a very indistinct ridge. Teeth in the upper jaw in a narrow band, those of the outer series larger than the others; palate smooth. Ventrals below the pectorals. A barbel.

Northern Atlantic. Southern Australian Seas.

777. CORYPHÆNOIDES DENTICULATUS, Richards.

Voy. Erebus and Terror, p. 53, pl. 32, f. 1-3.—Gunth., Cat. Fishes IV., p. 396.

First dorsal fin of eleven rays. Ventrals eight; other fins imperfect. Five series of scales between the anterior dorsal and the lateral line; scales spiny. The first dorsal ray very slender, and not serrated. Snout very short and obtuse; head without ridges. Teeth in the upper jaw in a very narrow band, those of the outer series being much stronger and widely set. The vent is situated vertically behind the anterior dorsal.

South Australia.

778. CORYPHŒNOIDES VARIABILIS, Gunth.

Ann. and Mag. Nat. Hist. 1878, Vol. II., p. 27.

Snout obtusely conical, projecting beyond the mouth, the cleft of the mouth extends beyond the middle of the eye. The teeth of the outer series are visibly stronger than the remainder. Barbel nearly as long as the eye. The interorbital space is flat, its width being much less than the diameter of the eye, which is comparatively small. The scales are provided with five ridges, each ridge composed of several spines, the central ridge being the strongest. There are eight scales in a transverse series between the first dorsal and the lateral line. Lower limb of the præoperculum scaleless. Second dorsal spine armed with barbs in front, which are rather distantly set. The second dorsal fin commences at a distance from the first, which is less than the length of the head.

South of Australia over 2,000 fathoms (Challenger).

FAMILY VI. PLEURONECTIDÆ.

Body strongly compressed, flat, with one of the sides, which is always turned upwards, coloured, whilst the other is colourless. Both eyes placed on the coloured side; and although the bones of the skull are present on both sides, they are not symmetrical. Dorsal and anal fins exceedingly long, without divisions. Gills four; pseudobranchiæ well developed; air-bladder none.

Carnivorus Fishes frequenting all coasts and rivers and living on the bottom.

Genus ARNOGLOSSUS, Bleek.

Mouth wide or rather wide, the length of the maxillary being more or not much less than one-third the length of the head. Teeth minute, of equal size, in a single series in both jaws; vomerine and palatine teeth none. The dorsal fin commences on the snout; dorsal and anal rays simple. Scales of moderate size; deciduous; lateral line with a strong curve above the pectoral.

Eyes on the left side. Gill-membranes broadly united below the throat; gill rakers slender, styliform.

European seas. East Indian Archipelago, &c.

779. Arnoglossus Bleekeri, *n. sp.*

D. 87. A. 67. L. lat. about 40.

Greatest height of body a little less than half the length, exclusive of caudal fin; length of head less than half the height of body. Mouth very oblique, the maxillary not extending beyond the vertical from the anterior margin of the orblt. Eyes very close together, the lower slightly in advance; the profile of the head is slightly concave or emarginate in front of the eyes; pectoral fins small; ventrals of about seven rays; caudal rather pointed; scales very deciduous, large; lateral line somewhat angularly curved above the pectorals; scales of the operculum very large. Colour uniform pale reddish-yellow, a spot on the upper part of the operculum.

Endeavour River.

Genus Pseudorhombus, Bleek.

Mouth wide, the length of the maxillary being more than one-third of the head. Teeth in both jaws in a single series, of unequal size; vomerine and palatine teeth none. The dorsal fin commences on the snout; dorsal and anal rays simple. Scales small or rather small; lateral line with a strong curve anteriorly. Eyes on the left side; interorbital space not concave. Gill-membranes united below the throat, not attached to the isthmus; gill-rakers lanceolate.

Nearly all seas.

780. Pseudorhombus Russellii, Gray.

Gunth., Cat. Fishes, Vol. IV., p. 424.

"*Flounder*" of Colonists.

B. 7. D. 70. A. 56. L. lat. 75.

The height of the body is one-half or less, of the length (caudal fin excluded); the length of the head two-sevenths of the same. Scales ciliated, those on the cheeks and anterior part of body, smaller than those on the tail; interorbital ridge very narrow and naked; no spines or tubercles along the lateral line or base of the fins. Lateral line with a semicircular curve over the pectoral fins. Snout a little longer than the orbit, the diameter of which is one-fifth or one-sixth of the length of the head. Lower jaw prominent; the length of the maxillary is two-fifths of that of the head. Teeth conical, pointed. Upper jaw with two or three pairs of strong teeth in front, and a series of very small ones laterally; lower jaw with about five strongly widely set teeth on each side. Front margins of the orbits nearly on the same level. Each fin-ray has a series of small smooth scales, and the anterior rays of the dorsal and anal have their tips prolonged beyond their membranes; the distance of the dorsal from the caudal is one-third of the depth of the free portion of the tail; the longest dorsal rays are in the posterior third of the fin; the pectoral is not quite twice as long as the ventral. Gill-rakers compressed, lanceolate, at moderate distances, half as long as the orbit. Yellowish-brown, generally with two or three dark spots on the lateral line.

Port Jackson. Port Essington.

781. PSEUDORHOMBUS MULTIMACULATUS, Gunth.

Gunth., Cat. Fishes IV., p. 427.

D. 71. A. 55. L. lat. 78.

The height of the body is contained once and three-fourths to once and four-fifths in the length, caudal fin excluded; the length of the head thrice and a-half in the same. Scales ciliated. Eyes very close together, with an elevated, naked ridge between. Snout very short, as long as the eye, the jaws equal anteriorly;

the maxillary has its dilated portion scaly, and extends to behind the middle of the eye. The upper jaw has three pairs of strong teeth in front and a series of smaller ones laterally; the lower has about fifteen on each side. The dorsal fin terminates at a short distance from the caudal, the posterior rays longer than the anterior; caudal rounded, rather prolonged; pectorals two-thirds of length of head; ventrals extend beyond the origin of the anal. Gill-rakers lanceolate, disposed at moderate distances, half as long as the eye. Greyish-brown, with smaller and larger sub-ocellated blackish-brown spots; fins finely spotted with brown, a series of larger distant spots along the basal half of the dorsal and anal fins.

Port Jackson (Aust. Mus.)

Genus TERATORHOMBUS, *n. gen.*

Mouth large; dentition very strong. The dorsal fin commences on the top of the head, the rays of that and the anal simple. Scales rather small, lateral line with a strong curve over the pectoral fin. Eyes on the left side, rather close together, the head very deeply excavated above the upper orbit. The blind side coloured like the other.

I looked upon this as an abnormal specimen of *Pseudorhombus Russellii*, which had had the forehead bitten out in its youth by some other fish, but I have lately seen, with Mr. Ramsay, another specimen so exactly resembling it in all its peculiarities, that I am compelled to look upon it as not accidental.

782. TERATORHOMBUS EXCISICEPS, *n. sp.*, (Plate II.)

D. 73. A. 60. L. lat. 77.

Height of body about one-half of the total length and twice the length of the head. Teeth long, strong, acute and distant. The snout is very convex about the mouth, behind this there is a very deep excavation, much more than semicircular; the upper eye is situated in the lower part of the excavation, and on the upper part the nape projects in a point over the eye. The colour is brownish on both sides and a good deal speckled. The fins are minutely spotted with a deeper shade of brown.

Port Jackson. Length about eight inches.

Genus RHOMBOIDICHTHYS, Bleek.

Mouth of moderate width or small, the length of the maxillary being one-third, or less than one-third, of that of the head. Teeth minute, of equal size, in a single or double series; vomerine and palatine teeth none. Eyes separated by a concave more or less broad space. The dorsal commences on the snout; dorsal and anal rays simple. Scales ciliated; lateral line with a strong curve anteriorly. Eyes on the left side.

Tropical seas, Mediterranean, Japan, and Australia.

783. RHOMBOIDICHTHYS SPINICEPS, *n. sp.*

D. 84. A. 64. L. lat 40.

Height of the body one-half of the total length. Scales large, deciduous, those of the lateral line square. Mouth small; teeth minute, in a single series. Eyes rather large, about one-third of the length of the head, the lower a little in advance of the upper; the interspace concave and scaly, and about two diameters of the ordit apart. The profile of the head almost vertical, with a slight concavity above the mouth; a horny point on the snout immediately above the maxillary, another on the upper front of the lower eye, and a-third on the lower front of the upper eye. The rays of the dorsal and anal fins are simple and clothed with smooth small scales, the rays are equally long throughout, those on the dorsal begin immediately above the snout, and in both fins they terminate close to the caudal; ventral fins close together; pectorals about the length of the head, and smallest on the blind side, but slight and narrow on both sides. Colour brownish-red, faintly mottled all over with blackish, two larger black spots on the caudal fin, one on the upper, the other on the lower edge, behind the middle. Length four and a-half inches.

Port Jackson.

Genus AMMOTRETIS, Gunth.

Eyes on the right side, on the same level, or the lower rather in advance. Mouth unsymmetrical, narrower on the right side than on the left, the length of the left maxillary being less than one-third of the head; teeth on the blind side only, where they are villiform, forming bands; no vomerine or palatine teeth. Dorsal and anal rays branched and scaly; the dorsal fin commences on the snout and is not continued on to the caudal. Two ventrals, the right in the same line, and continuous with, the anal. Scales small, ctenoid; lateral line straight. Gill-openings narrow, the gill-membranes broadly united below the throat; gill-rakers short, conical.

Australia.

784. AMMOTRETIS ROSTRATUS, Gunth.

Gunth., Cat. Fishes IV., p. 458.

B. 7. D. 80. A. 53. P. 12. V. dext. 6, sin. 4. L. lat. 90.

The upper part of the snout is produced into a flap overhanging the lower jaw. Colour uniform brownish-olive.

Port Jackson. Tasmania.

Genus RHOMBOSOLEA, Gunth.

Eyes on the right side, the lower in advance of the upper. Mouth unsymmetrical, narrower on the right side than on the left, the length of the left maxillary being less than one-third of that of the head; teeth on the blind side only, where they are villiform, forming bands; no vomerine or palatine teeth. Most of the dorsal and anal rays branched; the dorsal fin commences on the foremost part of the snout. One ventral fin, continuous with the anal. Scales very small, cycloid; lateral line straight. Gill-openings narrow, the gill-membranes being broadly united below the throat, gill-rakers short, conical.

Australian and New Zealand Seas.

785. Rhombosolea monopus, Gunth.

Gunth., Cat. Fishes IV., p. 459.

B. 5. D. 59. A. 42.

The height of the body is contained once and four-fifths in the length (without caudal), the length of the head thrice and two-thirds. Eyes separated by a naked space, the width of which is less than the vertical diameter of the eye; the lower eye is slightly in advance of the upper. Snout as long as the eye, the diameter of which is one-fifth of the length of the head. The maxillary on the right side extends to below the anterior margin of the eye; teeth in narrow bands. Jaws eqnal in front; the upper lip has a slight notch, in which the symphysis of the lower jaw is received. The cutaneous fold above the maxillary is not prolonged. The gill-opening does not extend upwards beyond the base of the pectorals. The dorsal fin commences on the foremost part of the snout, and terminates at a distance from the caudal, which is rather more than half the depth of the free portion of the tail; the anterior dorsal rays produced beyond the connecting membrane but considerably shorter than those behind the middle of the fin, which are nearly half the length of the head. Caudal fin, slightly rounded, one sixth of the total length. The six ventral rays are arranged in the same line with those of the anal fin, both fins being connected by a broad, complete, rayless membrane; the vent is situated on the blind side. The length of the pectoral is two-thirds of that of the head. Uniform brownish (in spirits); pectorals blackish posteriorly.

Australia (Gunther).

786. Rhombosolea tapirana, Gunth.

Gunth., Cat. Fishes IV., p. 459.

B. 6. D. 66. A. 50.

The height of the body is contained once and three-fourths in the length (without caudal), the length of the head nearly three times. Eyes separated by a very narrow ridge, the lower being slightly in advance of the upper. Snout as long as the eye, the diameter of which is one-fifth of the length of the head; the maxillary of the right side extends to below the anterior margin of the eye; teeth in very narrow bands; jaws equal in front, overlapped anteriorly by a cutaneous flap half as long as the eye. Gill-opening and ventral fin as in *R. monopus*. The dorsal fin commences at the base of the rostral flap, and terminates close by the caudal; the two anterior dorsal rays are prolonged beyond the connecting membrane, but are much shorter than the longest rays, which are behind the middle of the fin. Caudal fin slightly rounded, its length being contained five times and a-half in the total. The pectoral is little more than half the length of the head. Brown (in spirits), marbled with darker, and spotted with white.

King George's Sound. Tasmania.

787. Rhombosolea leporina, Gunth.

Gunth., Cat. Fishes IV., p. 460.

B. 6-7. D. 65. A. 43.

The height of the body is contained twice and a-third in the length (without caudal), the length of the head four times. Eyes separated by a naked space, the width of which is less than the vertical diameter of the eye. The lower eye is in advance of the upper. Snout longer than the eye, the diameter of which is one-seventh or one-eighth of the length of the head. The maxillary of the right side extends to below the anterior margin of the eye; teeth in rather broad bands. The upper jaw slightly overlaps the lower, which is received in a notch of the upper lip. The cutaneous fold above the maxillary is well developed, bearing the first dorsal rays. The gill-opening does not extend upwards beyond the base of the pectorals. The dorsal fin terminates at a distance from the caudal which is rather more than half the depth of the free portion of the tail; the anterior dorsal rays produced beyond the connecting membrane with their tips split into two fine filaments, but considerably shorter than the rays behind the middle of the fin, the length of which is two-fifths of that of the head. Caudal fin rounded, one-sixth of the total length. Ventral and anal fins as in *R. monopus*. The length of the pectoral is not much more than one-half of that of the head. Uniform-brownish (in spirits).

Australia (Richards.) Length nine inches.

788. RHOMBOSOLEA FLESOIDES, Gunth.

Gunth., Ann. and Mag. Nat. Hist., 1863, Vol. II., p. 117.

B. 6. D. 62. A. 41.

Similar to *R. leporina*, but with the body more elevated. The height of the body is rather less than one-half the length (without caudal), the length of the head two-sevenths. Eyes separated by a narrow, low, naked ridge, the lower being in advance of the upper. A cutaneous flap is suspended from the maxillary, overhanging the mouth. The gill-opening does not extend upwards beyond the base of the pectoral. The dorsal fin terminates at a distance from the caudal, equal to one-fourth of the depth of the free portion of the tail; the first dorsal ray is inserted immediately behind the maxillary appendage, and the four or five anterior rays are produced beyond the connecting membrane, but are considerably shorter than those behind the middle of the fin, which are nearly half as long as the head. Caudal subtruncated, its length being rather more than one-sixth of the total. The pectoral is somewhat more than half the length of the head.

Ventral as in *R. monopus* and *leporina*. Uniform brown. Length fourteen inches.

Port Phillip. "*Flounder*" of the Fishermen.

789. Rhombosolea bassensis, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 167.

"*The Sole*" of the Melbourne Fishmarket.

D. 75. A. 51. P. 12. C. 18. V. 7. L. lat. 90.

The height of the body is contained twice and a-half in the total length, the length of the head five times; the space between the eyes is covered with scales and is one-half the longitudinal diameter of the eye in width; the lower eye is considerably in advance of the upper; the length of the snout is contained three times and two-thirds in the length of the head, the eye five times. The dorsal fin begins at the extremity of the snout, the first twenty-five rays are prolonged into short filaments. Teeth on the blind side numerous, conical and sharp, in four or five irregular lines. Scales of body punctate-striate and strongly ciliated; the fin rays scaly. Dark brown, marbled with black, sometimes nearly entirely black.

Yarra River, Melbourne.

790. Rhombosolea Victoriæ, Casteln.

Pleuronectes ? Victoriæ, Casteln., Proc. Zool. Soc., Victoria, Vol. I., p. 168.

D. 56-57. A. 41-42. P. 11. C. 19. V. 6. L. lat. 85.

The height of the body is twice and one-third in the total length, the length of the head a little over four times; diameter of eye five times in the length of the head; the space between the eyes narrow and scaleless; teeth on the blind side long, slender, and numerous; the snout up to the edge of the lower eye, is as long as the diameter of the latter; the lateral line is straight, a branch from the operculum runs obliquely to the fifth or sixth dorsal ray. Scales small, rounded and concave. The dorsal fin is highest in the middle, and the rays are all longer than the membranes, the first is bifid and free or only connected with the others by a very low membrane. Colour olive-green, with large marbled blotches of a darker and brownish colour, blind side white. Eye black, with an orange circle.

Port Phillip. "*The Melbourne Flounder.*"

This is clearly a *Rhombosolea*, a genus apparently abundant on the South Coast of Australia, but never as yet taken so far north as Sydney. Count Castelnau proposed separating the present species from *Rhombosolea*, because the dorsal fin does not commence so near the snout as in the other species.

Genus NEORHOMBUS, Casteln.

Jaws and dentition equally developed on both sides; dorsal fin commencing above the eye; eyes on the left side. Teeth strong, in form of canines, apart one from the other, in a single series; eyes large, about on the same line; the space between them forming a narrow curved ridge; mouth wide; the maxillary large, being contained a little more than twice in the length of the head; caudal well separated from the other fins; ventrals and pectorals well developed; lateral line very strongly curved over the pectoral fin, and extending on to the caudal; the scales bordered and very finely ciliated."

Australia.

791. NEORHOMBUS UNICOLOR, Castel.

Researches on the Fishes of Australia, p. 45.

D. 55. A. ?. P. 13. C. 17.

Height of body contained twice and a-half in the total length, the length of the head three times and two-thirds, and less than its height. Snout convex in front of the eyes; dorsal fin rounded;

pectorals two-thirds of the length of the head. Colour (in spirits) dark brown.

Fremantle (Castelnau). Length nine and a-half inches.

Genus PELTORHAMPUS, Gunth.

Mouth small, twisted towards the left side, toothless on the other; teeth minute, in two distinct series on the left branches of the jaws; vomerine and palatine teeth none. Eyes on the right side, of moderate size; snout dilated, flat, sharp, bent downwards, hook-like. Dorsal and anal rays branched, naked. The dorsal fin commences on the foremost part of the snout. Pectorals well developed. The right ventral is continuous with the anal, the left very small. Scales small, ctenoid; the lateral line straight. Gill-openings narrow, the gill-membranes being broadly united below the throat; gill-rakers short.

New Zealand. Norfolk Island.

792. PELTORHAMAUS NOVÆ-ZEALANDIÆ, Gunth.

Gunth., Cat. Fishes IV., p. 461.

B. 5. D. 92. A. 57. P. dextr. 11, sin. 7. V. dextr. 6, sin. 5. L. lat. 78.

Brownish-olive, marbled with darker. Two blackish blotches on the lateral line.

Norfolk Island.

Genus SOLEA, Cuv.

Eyes on the right side, the upper being more or less in advance of the lower. Cleft of mouth narrow, twisted round to the left side. Teeth on the blind side only, where they are villiform, forming bands; no vomerine or palatine teeth. The dorsal fin commences on the snout and is not confluent with the caudal. Scales very small, ctenoid; lateral line straight.

Inhabitants of all seas.

793. SOLEA MICROCEPHALA, Gunth.

Gunth., Cat. Fishes IV., p. 466.

D. 79. A. 65. P. 11. L. lat. 90.

The height of the body is contained twice and three-quarters in the length (without caudal), the length of the head nearly six times. Each scale with about thirteen spines on its margin. Jaws equal in length anteriorly; the nostril on the coloured side is prolonged into a tube as long as the eye; the left side of the snout with numerous short papillæ. Eyes very close together, the upper slightly in advance. Pectoral fin with broad base, not much shorter than the head; that on the left side is very short and attached to the gill-membrane by a fold; ventrals separate, not continuous with the anal. The dorsal and anal fins terminate immediately before the root of the caudal, their posterior rays extending beyond the middle of the caudal. Anterior dorsal rays short; caudal entirely free, its length being eight times and a-half in the total length. Brown, with eleven or thirteen dark cross-bands, broader than the interspaces: the first on the snout, the second immediately behind the eyes, the last across the root of the caudal; vertical fins black.

Port Jackson.

794. SOLEA MACLEAYANA, Ramsay.

Proc. Linn. Soc. N. S. Wales, Vol. V., p. 462.

Port Jackson.

Genus PARDACHIRUS, Gunth.

Eyes on the right side, the upper in advance of the lower. Mouth unsymmetrical, narrow, narrower on the left side than on the right; teeth minute, on the blind side only. Dorsal and anal rays scaly; the dorsal commences on the extremity of the snout, and terminates at the root of the caudal. Pectorals none. Two separate ventrals. Scales small, not or only slightly ciliated;

lateral line straight, a second on the blind side along the upper profile of the neck, commencing from the snout; each dorsal and anal ray with a pore at the base. Gill-openings narrow, the gill-membranes being broadly united below the throat; gill-rakers rudimentary.

Indian Ocean and Archipelago.

795. PARDACHIRUS PAVONINUS, Lacep.

Gunth., Cat. Fishes IV., p. 479.—Bleek., Atl. Ichth. Pleuron., tab. 10, fig. 1.

D. 67. A. 50-52. L. lat. 90.

Dorsal and anal rays branched. Only the scales on the head and a few on the body minutely ciliated. The height of the body is two-fifths or one third of the total length (without caudal). Yellowish-brown; the head and body with numerous larger and smaller rounded white spots, edged and minutely dotted with dark brown, and with a round black dot in the centre; vertical fins with numerous whitish ocelli.

East Indian Archipelago, and Australia, Cape Grenville (Chevert Exp.).

Genus SYNAPTURA, Cant.

Eyes on the right side, the upper in advance of the lower. Cleft of the mouth narrow, twisted to the left side; teeth minute, on the blind side only; no vomerine or palatine teeth. Vertical fins confluent. Scales small, ctenoid. Lateral line straight.

Indian and Australian Seas.

796. SYNAPTURA QUAGGA, Kaup.

Gunth., Cat. Fishes IV., p. 485.

D. 68. A. 58-60. C. 18. P. 9. L. lat. 90.

The upper eye slightly in advance of the lower. The height of the body is rather less than one-third of the total length, the length of the head somewhat less than one-sixth. Jaws equal in length anteriorly; nasal tube not prolonged; eyes contiguous, each with a small tentacle. The upper rays of the right pectoral are prolonged, two-thirds of the length of the head; the left pectoral is very short, but rather broad. The gill-membranes are dilated on both sides and annexed to the pectorals. Yellowish, with eleven brown cross-bands, broader than the interspaces: only the anterior bands are more or less geminate: the first across the snout, the second behind the eyes, the third across the gill-opening, the last separated by a white band from the caudal. Caudal blackish-brown, with a pair of black ocellated spots, edged with white, on its posterior half.

Sydney, Brisbane, and Swan River (Castelnau).

797. SYNAPTURA SCLEROLEPIS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 363 pl. 10, fig. 4.

Port Darwin.

798. SYNAPTURA NIGRA, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. V., p. 49.

Botany Bay.

Genus PLAGUSIA, Cuv.

Eyes on the left side; pectorals none; vertical fins confluent. Scales small, ctenoid; lateral line on the left side double or treble. Upper part of the snout produced backwards into a long hook, covering the mandible; mouth unsymmetrical, rather narrow; lips of the coloured side with tentacles; teeth minute, on the right side only. One nostril on the left side, before the angle of the lower orbit; none between the eyes. Gill-opening very narrow.

Indian and Australian Seas.

799. PLAGUSIA GUTTATA, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 362, pl. 10, fig. 3.

Port Darwin, Endeavour River.

800. PLAGUSIA ACUMINATA, Casteln.

Researches on the Fishes of Australia, p. 44.

D. 90. A. 90. C. 10. V. 4.

The greatest height of the body is contained four times and one-third in the total length, the length of the head five and a-half times; the highest part is about the first third of its length, from thence it tapers to the tail, which is very acute; only one lateral line on the left side; the lip tentacles of the coloured side are short but thick; the height of the head at the opercle is equal to its length, rostral hook long, extending behind the lower eye; scales strongly ciliated. Colour of an uniform light creamy pink, the fin rays marbled with brown.

West Australia.

801. PLAGUSIA UNICOLOR, *n. sp.*

"*The Lemon Sole*" of the Fishermen."

D. 120. A. 90. V. 4. L. lat. 100 on the body.

Height of body about three and a-half times in the total length; the body tapering to a pointed tail. Rostral hook long; eyes small, more than their diameter apart, the upper sensibly in advance of the lower, a fleshy tubercle in front of the lower eye on the coloured side; a similar tubercle over the mouth on the blind side, marking the position of one of the nostrils. Mouth small, much twisted, on the coloured side with the lips covered with tentacles. Scales small, ctenoid, two lateral lines on the left side running almost parallel and extending from the front of the head to the tail; the upper keeping near the dorsal fin, the other near the middle of the body. The vertical fins are low, the rays simple. Colour light yellowish-brown, (the fins a little redder), indistinctly mottled with ashy-grey.

Port Jackson. Length six inches.

ON THE FLORA OF STRADBROKE ISLAND, WITH A DESCRIPTION OF NEW SPECIES.

BY F. M. BAILEY, F.L.S., &c.

The above island has been visited by botanists, and yet its flora is not well known. I made a visit to it some short time since in company with the Rev. B. Scortechini, a member of this Society and an indefatigable worker in the flora of South Queensland. The island forms one of the south and east boundaries of Moreton Bay. It is about forty miles in length, and seven wide. It is of somewhat wedge-shaped form. It seems to be mainly composed of loose drift sand, and may at one time have been a bank drifted up from the ocean similar to those which now make Moreton Bay so shallow or so difficult of navigation. The sand hills on the island are of considerable height, with large freshwater swamps between. There is not much grass, and what there is becomes coarse in the scrubs, but in places where there is not much timber a fair turf is formed. Spots may be found where *Loysia pungens*, Willd., forms a turf almost equal to the couch or *Cynodon dactylon*, Pers.

The timber consists of a few *Eucalypti*, conspicuous amongst which is *E. Planchoniana*, F.v.M., a tree hitherto thought confined to the Eight Mile Plains on the Logan road. *E. robusta*, Sm., is of frequent occurrence round the edge of the swamps. There are several *Banksia : B. semula*, R. Br., is the most abundant and forms a large spreading tree. Its wood constitutes the principal fuel used at the Benevolent Asylum at Dunwich on this island. The other trees are *Casuarina*, *Acacia*, *Frenela*, *Timonius Rumphii*, Roxb., &c. The shrub *Ricinocarpus pinifolius*, Desf., here grows up into a small fastigiall tree like a little Cypress. It flowers profusely and is one of the most beautiful of Australian shrubs. *Leptosperma*, *Melaleuca* and plants of *Epacrideæ* are numerous, but it will suffice here to mention only those whose Queensland habitat is not given in Bentham's and Mueller's Flora. First of these, *Boronia pinnata*, Sm., is met with in abundance along the edge of swamps forming often a dense thicket of from five to six feet in height. This when in bloom is a very attractive plant. *B. parviflora*, Sm., a much smaller species is frequently found in various localities. On some spots of very dry ground high up on the hill sides usually under the *Casuarina* and *Frenela* we noticed large quantities of *Macarthuria neocambrica*, F.v.M., a small, probably an annual, plant belonging to *Ficoideæ*. The following might be added to the diagnosis of this species given in the "Flora Australiensis":—Habit of plant compact, 6 to 12 in. broad, 3 to 6 in. high, composed of a few lanceolate radical leaves 3 or 4 in. long, which taper into rather long petioles. The rest of the plant formed of flowering branches which are dichotomously divided, bearing few small linear-oblong, nearly filiform leaves. Flowers near the ends of the branches, small, and pedicellate. Petals white, seeds black, and muricate. Flowering in October.

Scattered over both Stradbroke and Peel Island are two species of *Dipodium*, the common *D. punctatum*, R. Br., and another new species of which the following is a diagnosis:

Ordo *ORCHIDEÆ.*—Trib. *VANDEÆ.*

Dipodium Hamiltonianum, F. M. B., *(sp. nov.)*

Glabrum, rhizomate brevibus crassis squamis induto, caule multifloro, sepalis petalisque acqualiter oblongis, flavis, bifida caudicula reclinante.

In locis arenosis insulæ Stradbroke et Peel: F. M. B.

Planta efoliata. Rhizoma spissum, caulis 1—3′ *longus, basi circumdatus brevibus, crassis, obtusis, imbricatis squamis, superioribus acutiusculis, nec ita vicinis. Flores* 24—30 *maximam caulis partem tenentes, aureo-fulvi, purpureo maculati. Sepalia et petalia fere aequalia* 8‴ *oblonga. Labellum similiter longum, vel paulo longius, mento brevi, lateralibus lobis linearibus, obtusis, erectis, croceis, medio lobo oblongo, roseo, duplici lineari eminenti callo ad basim rimato, prope* *finem multo albo tomento induto. Columna dimidium sepalium attingens. Pollinia duo ovalia, supra bifidum caudiculum tota sua longitudine in columnam recumbentem lata.*

Brevitas squamarum, florum color et numerus, caudiculæ reclinatio, quæ constans cérnitur unoquoque examplari ad tristinam revocato, optime sejungunt ham speciem a D. punctato.

Homine Jacobi Hamiltoni ham speeiem voco, qui curam gerens publici Instituti a viris senio confectis, plurimum adjuvat in colligendis Naturalis Historiæ exemplaribus circa Insulas ad Moreton sinum positas.

Plant near *D. punctatum*, leafless, stems 1 to 3 feet high from a thick rhizome, the base clothed with thick. short, obtuse, imbricate scales, the upper ones more distant and acute. Flowers large, distant, but numerous, often from 24 to 30, usually of a rich yellow spotted with purple, and occupying the greater part of the stem. Sepals and petals oblong, about eight lines long. Labellum as long or longer, pouch short, lateral lobes linear, obtuse, erect, yellow, middle lobe oblong, pink, disk with two raised lines, the upper part with a dense white tomentum. Column about half as long as the sepals. Pollen-masses two, oval, the caudicles closely prostrate, rather long, like a line on the surface until lifted on the point of a needle.

The shortness of the scales, the color of flowers and above all the prostrate or recumbent position of the caudicles which is constant in all the flowers examined, separate this species from *D. punctatum*, It is the most attractive of all our Queensland terrestrial orchids, and wants but to be seen to become a favorite with cultivators of this curious family.

Hab. Stradbroke and Peel Islands, Moreton Bay.

The specific name is in honour of Mr. James Hamilton, the Superintendent of the Benevolent Asylum, Dunwich, who has always lent a helping hand to collect the Natural History specimens of the Islands of Moreton Bay.

The most beautiful of the flowering plants are met with in the large swamps or along their margins. *Philydrum lanuginosum*, Banks, which on the main land seldom rises above three feet, we noticed over six feet high with correspondingly large foliage and flowers, reminding one of the New Zealand flax. *Drosera binata* Labill., which is a small weed in Tasmania, here occurs with flower stalks two to three feet high. Equal in height with these are the curiously twice-forked leaves measuring often one foot in diameter. Here also the *Xyris operculata*, Labill., produces large bright yellow attractive flowers. But the most beautiful of these swamp flowers are the two forms of *Blandfordia*, *B. flammula*, Hook., and its golden variety "*aurea*"; these plants attain the height of three or four feet, and bear at the summit of the stalks a number of bell-shaped flowers about two inches long.

Two species of *Xanthorrhœa* inhabit these swamps. *X. macronema* F.v.M., which bears the largest flowers of the genus is a very showy plant and well worthy of garden cultivation. The other species is *X. hastilis*, R. Br. It is somewhat remarkable that no Queensland habitat is mentioned in the Flora Australiensis for this species, considering it is so plentiful on the island, and also that its flower spikes are used by the natives to make into a kind of beer. They collect the abundant juice from the nectary and allow it to ferment.

In viewing the extensive swamps of Stradbroke one cannot help feeling somewhat surprised that they should be allowed to be idle when they are so admirably adapted for rice cultivation. With regard to the richness of the soil one has only to look at the luxuriance of the natural vegetation, and this is so striking as to cause one to think that instead of plants of unusually luxuriant growth one had fallen in with new species. The land is flat, but easily drained and of large extent. In parts where the swamps are timbered is seen in perfection the superb orchid, *Phaius grandifolius*, Lour., and its yellow variety *Bernaysii*, with the other lovely terrestrial orchid *Calanthe veratrifolia*, Bl.;

we were glad also to see at the foot of some of the *Avicennias* just so as to be washed by the high tide, the pretty little Primulaceous creeper *Samolus repens*, Pers. Epiphytal orchids do not seem to be plentiful on the trees, and at the time of our visit, there were but few fungi to be seen, except at one spot where we found a large quantity of the poisonous agaric *Russula emetica*, Fr., found also in Europe. On some old logs we also gathered specimens of one of the cup lichens *Cladonia pyxidata*, Hoffm. Our stay was so short that we could do no more than glance about us, but no doubt an immense harvest awaits a patient and industrious collector on this island. Our visit was made at the end of October.

As next to the discovery of new species, fresh habitat is of importance to the botanist, I will bring under your notice that *Erythrina indica*, Lam., a tree hitherto thought to be exclusively tropical has been lately met with at Tallegalla the high land of the Rosewood scrubs situated some thirty or forty miles from Brisbane. Mrs. Marquis from whom I received the specimens, tells me that there are several of these trees, and that they are from sixty to one hundred feet high, thus equalling those of our tropical coast.

I will conclude these few remarks with the description of a new species of *Angophora* and *Daviesia* which I found some time back at a locality called "the Eight Mile Plain" about ten or twelve miles from Brisbane on the Logan Road.

ORDO *MYRTACEÆ*.—TRIB. *LEPTOSPERMEÆ*.

Angophora Woodsiana, F. M. B., *(sp. nov.)*

Arbor alta, cortice persistente, et rimoso, capite expanso. Ramuli sæpe tetragoni. Folia crassiuscula 4—7″ longa, lanceolata-acuminata, basi obliquo cuneata, copiosis ac subtilibus venis pinnatis in venam juxta marginem desinentibus, et venulis reticulatis inter primarias percursa, in petiolum ½—¾″ longum angustata. Paniculæ terminales, maxime *ramosæ ; quisque ramus vel pedunculus late compressus umbellas gerens 2—7 florum, qui magnitudine aliarum angophorarum flores exsuperant. Pedicelli ¾—1" longi acute angulares. Calicis tubus tres lineas longitudine, 4-5 lineas latitudine in summitate metiens, costatus, quatuor vel quinque costis patentibus, cæteris non ita conspicuis. Petala communiter quatuor, basi lata, summitate retusa, duro apice veluti in A. intermedia. Frutescens calix summitate ½" latus.*

In planitie vulgo dict. "Eight Mile Plains," prope Brisbane una cum Eucalypto tum Bayleyana tum Planchoniana invenitur.

Speciem hanc dicavi præstanti ac Reverendo Domino Juliano E. Tenison-Woods, Linnæanaæ Societatis Neo Camb. Aust. digno Præsidi.

Sp. A. subvelutina foliis subcordatis valde proxima.

A large tree with spreading head. Bark rough, persistent as in *A. intermedia*. Timber like the rest of the genus of but little value, and having concentric fissures, filled with a red fluid gum similar to the Bloodwood *(Eucalyptus corymbosa)*. The branchlets often four-angled; leaves thick, four to seven inches long, lanceolate-acuminate, oblique-cuneate at the base, with numerous fine parallel pinnate veins, and reticulate between them, connected by an intramarginal one near the edge, petioles half to three-quarter inches long. Panicles terminal, large, spreading, each branch or peduncle flattened and bearing an umbel of two to seven rather large flowers. Pedicels three-quarters to one inch long, acutely angled; calyx-tube three lines long, four or five lines diameter at the top, ribs four or five prominent, the secondary ones inconspicuous or altogether wanting. Petals usually four, broad and truncate at the top, the apiculate extremity of the hard part being below the margin as in *A. intermedia*. Fruiting calyx half in diameter at the top, and rather longer with four or five prominent wings produced into teeth, secondary ribs wanting or inconspicuous. Pedicels slender, angled, one inch long.

Habitat Eight Mile Plains, in company with *Eucalyptus Baileyana* and *E. Planchoniana*. The specific name is in honor of the Rev.

J. E. Tenison-Woods, F.G.S., President of the Linnean Society, New South Wales.

This species is allied to *A. subvelutina*, on the one hand, and *A. intermedia* on the other. The young foliage being somewhat cordate at the base and slightly glaucous like the first, and the habit of the tree is that of the latter. But its panicles and flowers are larger, the pedicels longer and the secondary ribs of the calyx are more frequently wanting; the foliage is also much larger and of a thicker consistence.

ORDO *LEGUMINOSÆ.*

Daviesia Wyattiana, F. M. B., *Series umbellatæ.*

Frutex alba, erecta, glabra 3—10′ *metiens. Rami acute triangulares striati. Folia linearia* 6—12″ *longa,* 2—3‴ *lata, basim versus ubi media costa utrinque conspicua cernitur, angustata, venis maxime obliquis parallellis, atque ita reticulatis ut oblongas areolas construant,* 1—3 *pedunculi ex superioribus axis emanantes* 8‴ *circiter longi, quisque gerens umbellum quinque florum pariter pedicellatorun. Bractae tres vel quatuor subtus medietatem pedunculorum sitæ, atque aliae efformantes involucrum prope pedicellas. Pedicelli* 6‴ *circiter longi, articulati prope calicem. Calix* 2‴ *longus, aeque denticulatus, leviter interne pubescens. Vexillum flabelliforme emarginatum, luteum, circa medium purpureum* 3‴ *latum, alae aeque ac vexillum longae, luteæ ad apice purpureæ. Legumen compressum* 5‴ *longum. Semina perpluries solitaria, oblonga ampla strophiola donata.*

Apud Eight Mile Plains. Florescit mense Sept. ac Novembris.

Species voveo Doctori Gulielmo Wyatt qui in Australia meridionali botanicam ac horticulturam maxime fovet.

A tall erect glabrous shrub of from five to ten feet, branches acutely triangular, the faces striate. Leaves linear, six to twelve inches long, two or three lines broad, tapering towards the base, where the midrib is prominent on both sides, veins very oblique almost parallel, the reticulations forming oblong areoles.

Peduncles one to three in the axils, the upper branches about eight lines long, each bearing an umbel of usually five pedicellate flowers. Bracts three or four obtuse small ones on the lower half of the peduncle and an involucre of similar ones close under the pedicels. Pedicels about six lines long, articulate just below the calyx. Calyx two lines long, teeth nearly equal, slightly pubescent inside. Standard flabelliform, emarginate, yellow with purple centre about three lines wide. Wings nearly as long as standard. Keel shorter, yellowish with purple tips. Pod flat about five lines long. Seeds usually solitary, oblong, mottled, with large strophiole. Flowering in September and November.

Hab. Eight Mile Plains, Logan Road.

The specific name is in honour of Dr. Wm. Wyatt, a great promoter of Botany and Horticulture in South Australia.

NOTES ON THE HABITS OF THE BLACK BREASTED BUZZARD, *Gypoictinia melanosternon*, Gould.

BY K. H. BENNETT, ESQ.

The range of this bird—so far as my experience goes—is confined to the plains which border the banks of the Murrumbidgee and Lachlan Rivers, and the wide expanse of open country on the north bank of the latter stream appears to be its especial habitat, for it is most frequently seen in that locality, and here also on several occasions I have discovered its nests. Its prey to a great extent, consists of various reptiles—such as snakes frill-necked, and sleepy lizards—it also has the singular habit of robbing the nests of Emus and Wild Turkeys (Bustards) of their eggs. My first information on this point I obtained from the blacks, and for some time I was inclined to disbelieve their assertion though the same story was told by blacks from all parts of the district, as it was so contrary to my experience of the Accipiter family. At length, however, I was compelled to alter my opinion, for I subsequently found portions of Emu egg shells in the nest of one of these Buzzards. The manner in which they effect the abstraction of the Emu eggs—as told me by the blacks—shows an amount of cunning and sagacity that one would scarcely give the bird credit for, and is as follows:—"On discovering a nest, the Buzzard searches about for a stone, or what is much more frequently found here, a hard lump of calcined earth. Armed with this the Buzzard returns (and should the Emu be on the nest) alights on the ground some distance off, and approaches with outstretched flapping wings, the Emu alarmed at this, to it, strange looking object, hastily abandons the nest and runs away, the Buzzard then takes quiet possession, and with the stone breaks a hole in the side of each egg into which it inserts its claw and carries them off at its leisure; for when the eggs are broken the Emu abandons the nest." So much for the blacks' story!

This however, is in a great measure corroborated by a friend of mine, who lives on the adjoining Station, and who told me that in August last, he found the nest of an Emu containing five eggs, and that all of them had a hole broken in the side, and that the fracture had been done quite recently, and in the nest also was one of these lumps of calcined earth about the size of a man's fist.

In a nest to which I recently ascended, I found amongst the remains of various reptiles, the shells of a couple of Bustards' eggs. In this nest were a couple of young Buzzards lately hatched.

I think after all this testimony there can be little doubt of its nest-robbing proclivities, a habit which I think is peculiar to this bird, and is not shared by any other member of the Accipiter family so far as I know. I have often asked the blacks, if the Wedge-tailed Eagle robs nests, but they always say no.

The nest of this bird is a rough structure, generally placed on a forked horizontal branch, and is often quite as large as that of the Wedge-tailed Eagle. It lays two eggs, which in colour and shape resemble those of the above mentioned bird, but are much smaller. Length 2·16 by 1·85, being strongly blotched with bright rust-red, with spots and dots of the same colour.

It usually lays about the middle of August, and the young leave the nest about the beginning of December. If undisturbed the old birds resort year after year to the same nest, but should it be robbed, they adandon it for ever, and it is never occupied by birds of the same species again, although other species of hawks, notably the brown hawk—*(Hieracidea orientalis)* sometimes takes possession. I have never known the Buzzard to touch carrion, or to feed upon anything that it did not capture, and except at the nest I have never seen them perch on a tree, but I have often seen them alight on the ground. The note which is something between a whistle and a scream is only uttered when visiting the nest.

GESNERACEÆ OF AUSTRALIA.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

The order of Gesnerworts is for the most part tropical or semi-tropical, and the species are generally valued for the beauty of their flowers. The two suborders, into which the order is divided (viz. *Gesnereæ* and *Cyrtandreæ)*, have a very different geographical distribution, for whilst the former is limited to the warmer parts of America, the latter extends to different regions of the world, especially in the East. It was not until 1823, when the eminent Explorer and Botanist Allan Cunningham visited Mount Tomah, that any species of the order were known to exist in Australia. The notice of *Fieldia australis*, which was subsequently referred to the *Gesneraceæ*, is thus recorded in a paper of Cunningham's in Hooker's Journal of Botany, Vol. IV., p. 286 : " A climbing, rooting-stemmed plant adhering to the trunks of the tree-ferns is very general in these shaded woods, where it covers also fallen timber. I was fortunate in detecting it in fruit and flower, it belongs to that division of *Bignoniaceæ* of Jussien, producing baccate fruit." This interesting plant which was named in honour of Baron Field, (then Judge of the Supreme Court of N. S. Wales), is found in moist and shady valleys from Gipps Land to the Blue Mountains, (Frag. Phyto. Aust. Vol. IV. p. 147.) and it is remarkable as being the solitary representative of a genus, endemic in Australia.

Bæa hygroscopica, which has been discovered by Dallachy in moist, shady places on the higher mountains at Rockingham Bay, was fully described by Baron Mueller in 1863, and referred to *Cyrtandreæ.* The genus *Bæa,* according to Mr. Bentham, comprises a few Asiatic species, one of them extratropical and one from the Seychelles Islands; whilst *B. hygroscopica,* which closely resembles the Chinese *B. hygrometrica,* is the only one endemic in Australia, being limited apparently to the northern parts of Queensland. This plant is a perennial with a short, thick woolly stock and radical leaves four or five inches long, having loosely branched, somewhat umbellate flowers, which are rather numerous and of a blue colour.

Since the publication of the fourth volume of the "*Flora Australiensis,* a new species of the order was discovered at Lord Howe's Island by Mr. Moore, F.L.S., Director of the Botanical Gardens. This plant is described in Baron Mueller's "*Fragmenta*" Vol. VII., p. 151, (1871), as a genus differing from any one hitherto known in the order, though in some respects resembling *Conandra* and *Rhabdothamnus.* It differs particularly from *Fieldia* and *Bæa* in its erect and almost tree-like habit, as well as in the shape and opening of the fruit. Baron Mueller has named the plant *Negria rhabdothamnoides,* the generic name being in honour of Professor Negri, the illustrious founder of the Italian Geographical Society, whilst the specific name arises from its likeness to *Rhabdothamnus.* This plant is said to attain a height of eighteen feet. and is therefore probably the largest species of the order, thus showing that, whilst Australia affords the largest species of the Labiate and Composite orders, a little island not far from her coast presents us with one of the most remarkable of the *Gesneraceæ*. Professor H. Baillon has recently published a very elegant figure of *N. rhabdothamnoides*, which will enable the student to recognise the peculiar marks of difference between the new genus and those to which it is nearly allied. The Baron separates it from *Conandra*, because the corolla is not of a rotate shape, nor has the fifth stamen any anther, whilst the connectives of the anthers do not cohere in a tube exceeding the cells. From the New Zealand shrub, *Rhabdothamnus*, the plant from Lord Howe's Island is separated, not so much by habit, as by the divisions of the calyx, the straightness of the filaments, the speedy separation of the anthers, and the less regular fissure of the capsule (Frag. VII.). Whilst the singular occurrence of *Negria* in a remote part of the world affords a problem yet to be worked out in the distribution of species, the plant commends itself by its elegance and beauty to the consideration of Horticulturalists and Florists.

REMARKS ON *Megapodius Brazieri.*

BY J. BRAZIER, C.M.Z.S., &c., &c.

I wish to correct an error made by Mr. E. P. Ramsay, F.L.S., in a Paper on the "Birds of the Solomon Islands," published in these Proceedings for 1879, p. 75. He there states that I had taken *Megapodius Brenchleyi* at the Island of Savo,* in the Solomon group, and that Dr. Sclater had named it from the egg alone, having never seen the bird. The fact is that H.M.S. Curaçoa, which I accompanied as Naturalist, during the expedition to the South Sea Islands, so interestingly described by the late Mr. Brenchley in his "Cruise of the Curaçoa," never called at Savo at all, and the *Megapodius* eggs were not collected there.

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* Known also as Savu, Galera, and Russell Island.

I find in the Proceedings of the Zoological Society of London, 1869, p. 528, the undermentioned information: "The Secretary exhibited, on behalf of Mr. John Brazier, C.M.Z.S., a specimen of an egg of a species of *Megapodius* from Banks' Islands, and read the following notes by Mr. Brazier concerning it:—'The egg I send the Society I obtained, with four other specimens, at Vanua Lava, or the Great Island in Banks' Group, 13° 52′ S. lat., 169° 4′ E. long., situated near the New Hebrides group. The bird is well known to the inhabitants of Banks' Island; and my specimens were purchased of a native. The *Megapodius* that lays this egg builds its mound on the mountains near the sulphur springs. The natives told me that the mound is large; or as they expressed it, a 'big-fellow house.' The contents of the eggs were good eating. When I was on shore collecting shells, &c., at Sandwich Island, New Hebrides, a native offered me two eggs for sale, but he wanted more than I felt inclined to give him for them. I believe my friend Sir W. S. Wiseman took four or five of the very same egg, that had been brought alongside of the ship at Vanua Lava, or Great Island. When I had bought my specimens from the natives, I set out at once for the mountains to obtain, if possible, some of the birds; but it came on to rain, and night setting in, I had to return to the ship. Our stay there was only one day, for the greater part of which it rained. I was the first naturalist that had ever landed on the island to collect specimens of natural history. I should mention that I obtained the eggs on the 21st of August, 1865. I send you one specimen; one I keep myself; and the other I sent to Mr. Krefft, for our National Museum."

The statement that I kept one for myself was not quite correct. I retained three of the eggs, two of which I have since presented to the Hon. W. Macleay and Dr. Cox, respectively.

Mr. Sclater stated that he was not aware of any previous record of the existence of *Megapodius* in the group of the New Hebrides, except the short notes of Dr. Bennett (P.Z.S., 1862,

p. 247) where he alluded to the occurrence of this form in the islands of Tanna and Sandwich. Mr. Sclater had compared the present specimen with the series of eggs of the birds of this genus in the British Museum, and found it to come nearest to that of *Megapodius Pritchardi*, G. R. Gray (P.Z.S., 1864, p. 41, pl. vi.) which is figured in Hartlaub and Finsch's Ornithology of Polynesia, plate 2. But it was larger and more deeply coloured than that egg, and appeared to indicate the existence of an undescribed species of *Megapode* in Banks' Island, for which, following Mr. Gray's example, he suggested the name of *Megapodius Brazieri.*

Mr. Brenchley remarks at page 240 in the "Cruise of H.M.S. Curaçoa"—"The natives brought me three large eggs of a bird which lives in the vicinity of those hot waters, that Wall was of opinion belonged to the genus *Megapodius*. These eggs, of much greater length than width, and pretty nearly the same size at either end, were of a pinkish tint; they reminded me that when at the island of Vate, * at the Christian village where Mr. Morrison lived, a native offered me two eggs exactly similar, which I declined, from fear of breaking them. I have heard that a large bird is to be found also in the neighbourhood of the volcano of Tanna."

The *Megapodius Brenchleyi*, described by Mr. G. R. Gray, Ann. and Mag. N. H., 1870, Vol. V., 4th series, p. 328, "Cruise of the Curaçoa," page 392, pl. 20, was found at Gulf Island, also called Galfe and Uji, Solomon Group.

Mr. G. R. Gray distinctly says, "A single specimen of the young bird, and two eggs (unfortunately in a broken state), were obtained at Gulf Island, where they were discovered in the month of September, 1865. These eggs are, both in size and colour, very similar to that of the *Megapodius Brazieri*, described by Mr. Sclater in Proc. Zool. Soc., 1869, p. 528. In 1864, I observed, in the Proc. Zool. Soc., p. 42, that an egg (very similar in every respect to those above referred to), had been brought from San Christoval Island. As Gulf Island lies close to this last mentioned island, it is therefore very probable that the birds of these two islands may eventually prove to be of one and the same species. Mr. Sclater has recorded that an egg of a *Megapode*, which he has described, under the name of *Megapodius Brazieri*, in the Proc. Zool. Soc., 1869, p. 528, has been found and brought from Banks' Islands. Mr. Brenchley's collection contains three specimens of eggs of a *Megapode* that were obtained at Vanua Lava, two of which are similar in colour and size to that described by Mr. Sclater; but the third example is a dirty white. Mr. Brenchley has a note in reference to them, that they were found in the vicinity of the hot springs on the mountains during the month of August 1865. The neighbouring group of islands, the New Hebrides, is also the abode of a species of *Megapode*; and we are told by Captain M'Leod that they are found abundantly, especially on Tanna and Sandwich Island. Both these islands are also referred to by Mr. Brenchley, who remarks that on the first mentioned island a large bird is spoken of as living in the vicinity of the volcanoes; while in the second island eggs of a *Megapode* had been offered for sale. It may be remarked that the mature state of the bird of both these groups is at present unknown to Ornithologists."

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*Vate is the native, the English name is Sandwich Island of Captain Cook.

From this it will be seen that Mr. Ramsay was in the first place incorrect, in stating that the egg to which Dr. Sclater gave the named of *Megapodius Brazieri*, was found at Savo Island, Solomon Group, when it was in reality found at Vanua Lava, or Great Island of Banks' Group, some hundreds of miles distant. He has also expressed his opinion of the probability of the *Megapodius Brenchleyi* of Gray, being of the same species as *M. Brazieri*. This is a mere vague surmise; the two species may possibly be identical, but there is not a shadow of proof in support of that view, and the probability is very great that *M. Brenchleyi*, from Gulf Island in the Solomon Group, is not the same as the *M. Brazieri* from the Bank's Group.

I subjoin the following quotation from the Zoological Society's Proceedings for 1874, p. 606. as it throws some light on the distribution of the genus in the South Seas:—

"A series of eggs of *Megapodes (Megapodius)* transmitted by Mr. John Brazier, C.M.Z.S., was exhibited, and the following notes on them read:—'I send twenty-four eggs of a species, or of various species of *Megapode*, of which fourteen are from Savu or Galera, or Russell Island; one from Treasury Island; and nine from New Britain, all islands of the Solomon Group. I also send one bird in spirits, which was hatched on board ship, August 21st, and died September 8th, 1872; this bird was from a Savu egg. The natives bring these eggs off for sale to passing ships by the thousand; they use them raw. I have eaten the eggs when boiled, but do not much care for them, as they have a raw-potato-like taste and smell about them. When boiled, the thin membrane that covers the albumen is of a lead-colour; but when the yolk and albumen are beat together and made into an omelette, as I have seen our cook do, it is not to be known from the common fowl's egg. At New Britain the natives brought them off also in great quantities, like the Savu natives; in fact one saw the blue jackets eating them all day long, or as long as the eggs lasted. There must have been a great many thousands consumed in two days at both islands. At Treasury Island I obtained four, but I broke two in blowing; I send one. I also send a very young bird from a New Britain egg. When at San Christoval, I was shown an egg that Perry, a white man living there these last five years, said was laid by the 'Wild Fowl'; and upon my visiting him a few days after, he had just obtained another from the nest of his domestic fowls. He being in bad health at the time, I did not press him to let me have it; and for two days I traversed the mountains with guides to try and obtain specimens of the bird, but without success.'"

NOTES ON THE OCCURRENCE OF ARTESIAN WELLS IN THE ALBERT DISTRICT, NEW SOUTH WALES.

BY C. S. WILKINSON, L.S., F.G.S.

As the occurrence of Artesian wells on the Messrs. Officer's Killarah Run, near the Darling River, may not be generally known to the members of this Society, I desire to lay before them a few particulars regarding it.

In putting down some tube-bores at the so-called "Mud Springs" of Wee Wattah and Mulyeo, at Killarah, Mr. David Brown, manager for the Messrs. Officer Bros., struck a strong flow of water, which, at the Wee Wattah spring rose in the bore and flowed from the tube at a height of twenty-six feet above the surface of the ground. Some months ago Mr. Brown personally informed me of his important discovery; and more recently Mr. H. A. Gilliat, Government Inspector of Tanks, who has seen the wells, has also given me a description of them which I will relate to you in his own words.

"The Wee Wattah Well is in a large flat about eighteen miles back from the River Darling. Mr. Brown had five bores put down, varying from 134 to 142 feet, from all of which water was obtained. But from the last bore water is now running Mr. Brown estimates, at the rate of nine gallons per minute, with a temperature at the surface, of 82° Fahr. All the others were choked by the fine drift coming up the pipe; some iron pyrites, and a few water worn pebbles were found amongst the drift. The bore passes through clay and clay mixed with drift until the water was struck at 110 feet.

"The water has flowed over pipes screwed on at a height of twenty-six feet above the surface, and without perceptible diminution of the supply to ten feet above the surface.

"From one of the bores water flowed for some time at the rate of fifty gallons per minute, but it soon became choked with the drift. Four inch pipes are used in the bores.

"Close to this is a Mud spring, about forty feet in diameter, there is no perceptible flow from it, but water is always to be found in a hole that has been opened in it. It is similar to some found on the Flinders, in the neighbourhood of Mount Brown, though not retaining the usual shape of a regular truncated cone, which may be owing to it having been trampled down by cattle.

"Mullyeo is fourteen miles North-east from Wee Wattah, and twenty-four miles back from the Darling. Close to an old native spring Mr. Brown has put down four bores, all of which are still running, although the pipes have been drawn from three on account of the small supply.

"In the last bore put down, water was struck at 49 feet, and is flowing at the surface at the rate of twelve gallons per minute; the water here is cooler at the surface, the temperature being about 63° Fahr. I have placed in Mr. Wilkinson's hands some small pieces of bone, found in these bores. Water was struck first at seventeen feet from the surface, and the bore went through drift with no clay from the surface. The flow ceases at a height of four feet above the surface. The pipes are of the same diameter as at Wee Wattah.

"Goomery is on the Toorah Run, belonging to Messrs. McCaughey and Co., the owners of the Dunlop Station. I am informed that the bore is about 100 feet deep, and the water rises to the surface; the supply is small; it is about twenty-five miles back from the river, and is in a line with the two wells just described. I was unable to visit it, and I am consequently unable to give any particulars."

This discovery of Artesian water is of great importance; and I have no doubt but that in many other localities throughout the Darling District similar water supply will be obtained.

The fragments of bones above referred to, are probably, those of the *Diprotodon;* with them Mr. Brown also found fragments of petrified wood. The water-bearing strata are of Post Pliocene age.

CONTRIBUTION TO A SOUTH QUEENSLAND FLORA.

BY THE REV. B. SCORTECHINI, L.L.B.

The only department of Australian Botany, which has received as yet any thing like a fair share of study from scientific men, is the taxological department, Much road remains untrodden before we shall go through all the branches of Australian Botany. Many treasures lie hidden under ground, which paleontological Botany will some day bring to light. Many medicinal properties, useful and economic principles, pervade our plants, which botanic chemistry will in future wrest from them. Little or nothing has been done in cryptogamic Botany. Even in systematic Botany not a little is left undone.

If that imperishable monument raised by the genius and labour of Bentham and Mueller—*the Flora Australiensis*—is a sure guide to the classification of Australian plants, and as such cannot be surpassed, yet the distribution of our plants is very imperfectly known. To this knowledge, the compilation of local Floras will lead, a work of time and patience. Few of them as yet exist. Towards the completion of a South Queensland Flora I beg to contribute a list of some plants, which are not known to science as existing in South Queensland. The area in which I met them growing extends from South and West of the Logan waters to the border of the Colony, and the Pacific sea-shore. The President of this Society and Mr. Bailey have already given us a complete census of the Brisbane Flora, which takes a radius of twenty-five miles around Brisbane. The incomplete list I now offer, begins where the Brisbane Flora list ends, on the south side.

Much the same Flora as that of Brisbane prevails in this area, but many inhabitants of the New South Wales Flora enter our territory without reaching Brisbane. Some of our northern forms of vegetation are here too localized. Thus it is like a place of meeting of the Northern and Southern Flora. There are few which are so local, as to have no representatives either South or North. From the few facts presented by the habitat of these plants, there is no room to make an attempt at generalization. Any particular remark which might be deemed worthy of notice will be appended after each plant. No new species are here described; nor is it likely that we shall find many new ones in this locality. The South Queensland Flora is not isolated, since the South and North Flora meet here, and these being already known from the thorough search instituted elsewhere, little remains unknown. Neither are all the species here mentioned, which while existing elsewhere belong likewise to our Flora. Many inaccessible places are as yet unexplored, many scrubs are not as yet penetrated, many heights are not scaled, many swamps have not been waded through. If it falls to my lot to come by them, I shall present another handful of them, and thus help to a compilation of the Flora of this locality.

DILLENIACEÆ.

Hibbertia dentata, R. Br.

A southern plant, which extends from Victoria through New South Wales into Queensland. Only very sparingly to be found in South Queensland. The northernmost station in which I have met it is Tambourine mountain, thirty miles south of Brisbane; it is more frequently to be seen as we proceed further South. It flowers very early in spring.

CRUCIFERÆ.

Cardamine stylosa, DC.

Like the preceding, a southern plant; it is observed from the eastern coast of Tasmania, through Victoria and New South Wales. Its entrance into Queensland was first noticed by Mr.

W. Hill, at Mount Lindsay. I have seen it growing plentifully at Tambourine Mountain, in localities where the scrub had been cleared. In August it was already in fruit.

CARYOPHYLLEÆ.

Stellaria media, Wilh. DC., Prod. I. 397.

As Leichhardt found this on the plains of the Condamine, it is not, strictly speaking, a new member of the Queensland Flora: still no station was noted for it on the eastern side of the ranges. Its beautiful white star-like flowers break the dull monotony of the wet flats along the Albert River in the months of October and November.

MALVACEÆ.

Sida corrugata, Lindl., in Mitch. Three Exped., II , 13.

This most variable plant flowers at Dugundan in November.

STERCULIACEÆ.

Sterculia diversifolia, Don., Gen Syst. I., 516.

It flowers in October at Dugundan.

Melhania incana, Heyne : W. and Arn. Prod. 68.

A small tropical shrub, flowering at Dugundan in the month of March.

RUTACEÆ.

Boronia pinnata, Sm., Tracts. 290, t. 4.

I observed this first in a somewhat dwarfed state trailing on the ground at Nerang Creek, and met it again in Stradbroke Island in a stately form bordering the edges of swamps. A prettier and hardier shrub for ornamental cultivation is hardly to be obtained. Its flowering season runs from August to November.

Boronia parviflora, Sm. Tracts. 295, t. 6.

Another southern *Boronia* entering into Queensland. To call it *parviflora*, seems to be a misnomer if applied to the *Boronia* which grows in Stradbroke Island. After all this might prove to be a large variety of the normal *B. parviflora*. This Stradbroke variety presents all the parts of *B. parviflora* proportionately larger. It flowers in August.

MELIACEÆ.

Owenia venosa, F. Muell.

It grows plentifully on the eastern side of the dividing range at Coochin. Flowers and fruits seen in the month of October.

CELASTRINEÆ.

Celastrus bilocularis, F. Muel., in Trans. Phil. Inst., Vict. III., 31.

The variety of *C. bilocularis* with sharply toothed leaves found growing in Warwick, is to be met with in the Dugundan scrub. From the Tweed (Moore) to the Dawson River (F. Muell.) is its area of growth. Seen flowering in November.

STACKHOUSIEÆ.

Stackhousia ovíminea, Sm., in Rees. Cycl. XXXIII.

A member of the Brisbane Flora too. In wet sandy places it grows along the Logan road. To be met also on Stradbroke Island. It flowers in November.

LEGUMINOSÆ.

Bossiaea heterophylla, Vent. Jard. Cels. t. 7.

Seen at Burleigh Heads in low, wet, sandy ground, and on Stradbroke Island about sandy ridges.

Crotolaria humifusa, Grah. in Wall. Cat. 5421.

Very seldom to be met with. I have seen only one patch flowering in May, on the Logan River. Mr. Bailey gathererd some specimens of it at Enoggora near Brisbane.

Uraria picta, Desv. DC., Prod. II., 324.

Only one specimen, which was got near Beenleigh.

Cassia Brewsteri, F. Muell., 4 Ann. Rep. 17.

It grows at Tallebudgera to a high slender tree in scrubs. At Coochin it does not exceed ten feet high, growing among rocks. Its leaflets are more numerous than those of the normal species, minutely hoary and tomentose. The inflorescence is glabrous. This small variety deserves cultivation, as a prettier sight can hardly be desired. The luxuriance of its golden yellow racemes gracefully drooping, mingled with the deep green of its pinnate leaves claims for it a prominent place in flowering shrubberies. It is in full bloom in November.

Pithecolobium glandiflorum, ? Benth., Flor. Austr. II., 424.

Only seen in fruit, of which no description exists anywhere. It might prove a new species when the flowers can be examined. This good-sized shrub grows along the banks of Tallebudgera Creek. The annular pods, red-yellow outside, orange inside, the outer edge crenate, opening and exhibiting the shining, black and ovate seeds like a set of ebony teeth, give a charming appearance to the whole shrub, when they hang in profusion among its verdant, dense foliage. The branches bear invariably one pair of pinnæ in a long petiole, and each pinna two or three pairs of leaflets of greater consistency, and more markedly veined than those of *P. pruinosum*, acuminate, from three to five inches long, and nearly sessile.

ROSACEÆ.

Rubus Moorei, F. Muell., Frag. IV., 29.

Plentiful on the southern side of Tallebudgera Creek, but never seen on the northern side.

SAXIFRAGEÆ.

Schizomeria ovata, D. Don, in Edin. Phil. Journ. 1830.

In scrubs a few miles past Nerang Creek to New South Wales, generally a low shrub, though about Burleigh Heads, it grows to a good sized tree. It flowers in October.

Bauera capitata, Ser. in DC. Prod. IV., 13.

A small erect shrub growing near swamps close to Burleigh Heads along with *Calythrix tetragona*, *Strangea linearis*, and many *Ericaceæ*.

DROSERACEÆ.

Drosera binata, Labill., Plant Nov. Holl., I., 78, t. 105.

A gigantic variety growing in swamps in Stradbroke Island. Nearly three feet high. Seen in flower in the month of October.

COMBRETACEÆ.

Lumnitzera racemosa, Willd., DC. Prod. III., 22.

A tropical plant, which attains the proportion of a tree on the coast of the Gulf of Carpentaria, but can scarcely raise its head above the muddy ground near Cleveland, not many miles east of Brisbane.

MYRTACEÆ.

Calythrix tetragona, Labill., Plant. Nov. Holl. II., 8.

This pretty little plant, which was well known in all Australian Colonies, except Queensland, has been observed by me growing abundantly at Burleigh Heads. It chooses for itself sandy soil bordering swamps. Were it not for its fugacious corollas, and the brown reddish hues which the calyx with its filamentous lobes takes, rendering thus this little shrub not altogether sightly, it should be numbered among ornamental plants. Cultivation might remedy these defects. It flowers in October.

Leptospermum abnorme. F. Muell., Herb.

It is with some hesitation that I introduce this plant into the South Queensland Flora. Its characters do not altogether answer the description of the typical *L. abnorme*. Stradbroke Island.

Syncarpia laurifolia, Ten.

Between Tallebudgera and Nerang Creek.

Myrtus racemulosa, Benth., Fl. Aust. III., 276.

At Tallebudgera among scrubs, flowering profusely in the month of November.

ONAGRARIEÆ.

Epilobium junceum, Forst., in Spreng. Syst. II., 233.

Not very common along the Logan River, and Christmas Creek.

FICOIDEI.

Mesembryanthemum aequilaterale, Hook., Fl. Tasm. I., 146.

Common along the sea-coast from Nerang Creek to Burleigh Heads.

UMBELLIFERÆ.

Xanthosia pilosa, Rudge, in Trans. Lin. Soc. X., 131.

Stradbroke Island.

ARALIACEÆ.

Panax cephalobotrys, F. Muell., Frag. II., 83.

Tallebudgera.

COMPOSITÆ.

Calotis scapigera, Hook., in Mitch. Trop. Aust. 75.

On the Coochin Coochin flats.

Brachycome basaltica, F. Muell., Frag. I., 50.

Very seldom met with on sandy ridges near the Logan River.

Ammobium alatum, R. Br., in Bot. Mag. t. 2459.

Coochin Coochin.

Cymbonotus Lawsonianus, Gaudich.

The wet flats of Dugundan are sparsely studded with the yellow flowers of this humble composite. Found also abundantly on the Darling Downs, near Toowoomba. It seems to cross the ranges down its eastern slopes, and advances no further east than Dugundan along the Teviot Brook.

GOODENOVIEÆ.

Scævola suaveolens, R. Brown, Prod. 585.

The sandy beach which from Nerang Heads goes to Point Danger at certain spots is carpeted by patches of this lovely plant. Although its habitat at Moreton Island was known, I find no mention of it in localities within my area.

Scævola microcarpa, Cav., Ic. VI., t. 509.

Among stony ridges at Coochin Coochin, as also at the Upper Albert River near Nindooimba.

CAMPANULACEÆ.

Lobelia anceps, Thunb., DC., Prod. VII., 375.

Commonly met with at Burleigh Heads, Cleveland, Stradbroke Island, in all kinds of situations.

EPACRIDEÆ.

Leucopogon segiter, R. Br., Prod. 545.

Epacris pulchella, Cav., Ic. IV., 26, t. 345.

Both these *Epacridæ* grow in marshes at Burleigh Heads, and Stradbroke Island, near Dunwich.

PRIMULACEÆ.

Samolus repens, Pers. Syn. I., 171.

Under the shade of *Avicennia officinalis* and *Brugniera Reedii*, bathed by the tide. Mr. Bailey and I found this lovely *Samolus* growing both at Cleveland and Stradbroke Island.

APOCYNEÆ.

Alstonia mollis, Benth., Fl. Aust. IV., 315.

The difference between this and *A. constricta* is so slight, that they might well be thrown into one species. They both abound in a valuable medicinal bitter principle. It grows near the Logan River, and *A. constricta* at Lytton.

SOLANACEÆ.

Solanum semiarmatum, F. Muell., Frag. II., 163.

Solanum campanulatum, R. Br., Prod. 446.

SCROPHULARINEÆ.

Mimulus gracilis, R. Br., Prod. 439.

On all the damp flats along the Albert and Logan Rivers, this little *Mimulus* abounds. I never met it yet on the north side of the Logan. Specimens can be seen, branched, and over one foot high, but generally it bears out the specific description. It begins flowering in October, goes through November, and even in December some late flowers are seen decking moist prairies.

CONVOLVULACEÆ.

Ipomea pes-capræ, Roth., Nov. Sp. Pl. 109.

Its long trailing stems crossing the creeping stems of *Vignea lutea* form a net of verdure on the white sands of the sea-shore near the mouth of Nerang Creek. The yellow flowers of one mingling with the purple bells of the other present a pretty sight on that barren ground.

Ipomea Turpethum, R. Br., Prod. 485.

The foliage, inflorescence, capsule and seed point, to this species, but only after the examination of its flowers could it be claimed with certainty as a member of the South Queensland Flora. In the scrub, which crowns the summit of Burleigh Heads, this luxuriant twiner climbs the heights of trees, falls down in festoons, and then trails among stones. It must flower about February or March.

LABIATÆ.

Lycopus australis, R. Br., Prod. 500.

It flowers in January along the Logan River.

Prostanthera lasianthos, Labill., Pl. Nov. Holl., II., 18, t. 157.

In gullies near Mudgerda Creek, and Coomora River is sparsely scattered this shrub, which in these localities attains the height of ten feet. In Tasmania it is a conspicuous tree. Its scented leaves, and never ceasing supply of flowers, which succeed each other in profusion for three months of the year should make this plant a favourite with lovers of garden flowers.

Tencrium corymbosum, R. Br., Prod. 504.

At the top of Tambourine Mountain it grows to be a nuisance to farmers. If allowed to take hold in cultivated ground it will prove a troublesome weed. It flowers in December and January.

PHYTOLACCACEÆ.

Phytolacca octandra, Linn.

Close by stockyards, in broken up ground, and by the road side, especially if through scrubs, this introduced plant is to be seen near Tallebudgera, and the Coomera. Mr. Bailey has found it growing near Brisbane, by the three mile scrub.

PROTEACEÆ.

Strangea linearis, Meisn., in Hook., Kew. Misc. VII., 66.

I met first only one specimen of it on the sandy hills of Stradbroke Island. But on the edges of marshes close to Burleigh Heads, it seems to have its head-quarters, such is the abundance of its growth there. All the examined follicles are monospermous. It flowers in December.

EUPHORBIACEÆ.

Euphorbia pilulifera, Linn.

In many localities. Mr. Bailey first discovered it in South Queensland some time ago on Taylor's Range. It springs up plentifully in burnt country before other vegetation appears. It is said to be a remedy against asthma. The attention of medical men should be directed to this, and other *Euphorbias*, with which we abound.

Croton phebalioides, F. Muell.

It edges Dugundan scrubs along the Teviot Brook, and it is plentiful in Barr Scrub near Beenleigh. It flowers in November and December.

ORCHIDEÆ.

Dipodium Hamiltonianum, Bailey, Ined.

This pretty orchid, which Mr. Bailey on our last trip to Dunwich discovered at Stradbroke Island, has been again found by me growing on sandy hills near the Logan village. Its stature is more diminutive than the Dunwich specimens, and the flowers less numerous. It blooms in December.

Pterostylis acuminata. R. Br., Prod. 326.

Near the Logan village, flowering in the month of April.

Mr. Brazier exhibited *Ancylus Cunninghami*, and a supposed new species of *Gundalucnia*, collected by Lieut. C. E. Beddome in Tasmania.

The Hon. James Norton, a fungoid growth of great size from the bark of a Christmas tree.

Mr. Woods, a portion of a pile, showing ravages of marine borers.

Mr. Palmer, Aboriginal Weapons and Implements from Broad Sound, collected by Mr. T. Illidge, of St. Lawrence; Potatoes showing inroads of Potato Moth, with pupa and perfect insect; and branch of a Chinese Pear tree with fruits from both the Autumn and Spring flowering. The former being perfectly matured, after remaining on the tree during the severe frosts of last winter.

it grows plentifully on the slopes of sandy hills near the Logan Village, Tambourine, Dugundan.

LILIACEÆ.

Blandfordia flammea, Hook., Bot. Mag., 4819.

This beautiful plant lifts up its head of drooping flowers in marshy places near Burleigh Heads, and Nerang Creek. It grows together with its larger variety *aurea*. The swamps north of Dunwich present a grand appearance when in the months of December and January these *Blandfordiae* are in full bloom. No garden ought to be without this flower, as for beauty it can vie with the best of the lily tribe.

Tricoryne platyptera, Reichb.

This cannot be confused with *T. anceps*, as the stems, besides being slightly flattened, carry wings of about two lines. It grows near Eight Mile Plains.

Caesia vittata, R. Br., Prod. 277.

In grassy flats all over the country south of the Logan River.

ALISMACEÆ.

Damasonium australe, Salib.

In marshy places near Tambourine.

LYCOPODIACEÆ.

Lycopodium cernuum, Linn.

Plentiful in the swamps of Stradbroke Island, seldom to be met with at Burleigh Heads; seen at Eight Mile Plains.

NOTES AND EXHIBITS.

Mr. Whittell exhibited a fine collection of Insects and Birds' Eggs, collected in the Albert and Darling Districts.

Mr. Brazier exhibited *Ancylus Cunninghami*, and a supposed new species of *Gundalucnia*, collected by Lieu. C. E. Beddome in Tasmania.

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WEDNESDAY, FEBRUARY 23RD, 1881.

The President, J. C. Cox, Esq., M.D., F.L.S., in the Chair.

Captain Maclear, of the H.M.S. "Alert," and Dr. Coppinger, R.N., were introduced as visitors by the President.

MEMBER ELECTED.

Dr. Alessandri, of the University of Pisa.

DONATIONS.

Transactions and Proceedings of the Royal Society of South Australia.

PAPERS READ.

A SHORT RESUMÉ OF THE RESULTS OF ANTHROPOLOGICAL AND ANATOMICAL RESEARCHES IN MELANESIA AND AUSTRALIA.

(March, 1879—*January,* 1881.*)*

BY N. DE MIKLOUHO-MACLAY.

After I had left Sydney in March, 1879, I visited the following islands: New Caledonia, Lifu; of the New Hebrides*:* Tanna, Vate, Tongoa, Mai, Epi, Ambrim, Malo, Vanua Lava; of the Admiralty Islands: the groups—Lub (or Hermit), Ninigo (Echiquier), Trobriant; the Solomon Islands; the islands at the south-east end of New Guinea, and the islands of Torres Straits.*

Only a very few of the results of the journey can be comprehended in a short *resumé;* of these, the first two of the following appear to me to be the most important:—1. Many islands of Melanesia† (especially some of the islands of the New Hebrides, of the Solomon Group, of the Louisiades, New Ireland, &c., &c.), possess a well-marked brachycephalic population (the breadth-index of many heads exceeds 80, and sometimes even 85), which circumstance is assuredly not ascribable to a mixture with another race, and proves that brachycephalism has a much wider range in Melanesia than has been hitherto supposed. This is a result of numerous careful measurements of heads and skulls‡ of the aboriginals of different islands of Melanesia. 2. Although in some villages of the Southern coast of New Guinea there is noticeable a Polynesian admixture, yet this circumstance by no means permits of the aboriginals of the south-eastern peninsula (who are a branch of the Melanesian stock) being called a "yellow Malayan race," as has been frequently done of late years. 3. An acquaintance with the languages of the group Lub (or Hermit) and the dialects of the Northern coast of the large island of the Admiralty Group, as well as the native traditions of the former, has shown that the population of the group Lub emigrated from the Admiralty Islands. Further acquaintance with the natives of Lub proved that there is among them a Polynesian admixture, which has resulted from the carrying off of the women of the group Ninigo, and from a frequent intercourse with the inhabitants (also a Melano-Polynesian race) of the smaller group Kaniet or Kanies (or Anchorites). My stay among the inhabitants of the Admiralty Islands has afforded me a glimpse into many interesting customs of the islands; but an account of these observations and researches cannot be condensed within the compass of a few sentences. To this series of results belong also the observations which I never neglected to make during the journey in Melanesia, whenever the opportunity presented itself—especially observations on their customs, such as the deformation of the head, tattooing, perforation of the septum narium, alæ nasi, lobes and margins of the ears. I have also succeeded in making further observations, and obtaining more information, on the macrodontism in the Admiralty and Lub islands.

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*A more detailed account of the route, of the time spent at the different places, with sketch maps of the routes and other details, will be found in my communications to the Imperial Russian Geographical Society, in the Jswestija of the Society.

†By the name "Melanesians," I designate exclusively the frizzy-haired inhabitants of the South Sea Islands.

‡In order to eliminate any doubt as to the correctness of the cranial measurements on living individuals, I have not neglected to collect a considerable number of undoubtedly authentic skulls from New Caledonia, New Guinea, the Admiraltys, Ninigo, and Solomon Islands.

On my way back from the islands of Torres Straits I visited Brisbane, where, at first I only intended to remain a few days. Here, however, a favourable opportunity presented itself of acquiring some interesting anatomical material for my anthropological researches, which circumstance induced me to prolong my stay for several months. I found, namely, that there was a possibility of continuing my researches on the comparative anatomy of the brain of the different varieties of the genus *homo*, which were commenced in 1873 in Batavia and resumed in Sydney in

1881. Although the material in question consisted only of three brains, yet I find that this new contribution to our knowledge of race-anatomy supports the view which I may briefly summarize as follows:—The investigation of the brains of representatives of different races of men shows that there occur peculiarities of by no means trifling import, which one cannot regard as individual variations. To this category belong differences in the development of the *corpus callosum*, of the *pons varolii*, of the *cerebellum*; differences in the volume of the cranial nerves, and so forth; also the arrangement of the convolutions of the *cerebrum* is different, and I believe that in course of time it will probably be discovered that there exist certain definite types of cerebral convolutions corresponding to the principal varieties of mankind. In order to discover those types much material will require to be conscientiously examined; and I hope that my investigation will induce other anatomists to work in this direction to prove or to disprove this statement, which in the present state of our knowledge can only be more or less hypothetical.

On my way from Thursday Island I let slip no opportunity of examining, measuring, and photographing the remnant of the Australian aboriginals; and hearing it stated in various quarters that there were living in the interior of Queensland certain natives, described as devoid of hair, I thought the problem of a possible occurrence of a hairless stock among the aboriginals worthy of a personal investigation. I have written to Professor Virchow, of Berlin, at length concerning my examination of this hairless family, which I found at Gulnarber Station, near St. George, on the Belonne River. This was made considerably easier for me by the kind assistance of Mr. G. M. Kirk, of Gulnarber Station. As regards this instance of natural, and in this case hereditary *atrichia universalis* among the Australian aboriginals, I will only remark that it forms an interesting antithesis to the well-known cases of excessive *hypertrichosis*.

In order to work quite without disturbance, availing myself of the kind hospitality of the Hon. J. P. Bell, I went to Jimbour, near Dalby, where I was able for some fourteen days in absolute quiet to revise my travelling notes, and to overtake my neglected correspondence.

With a view of pursuing comparative anatomical researches on the brain of the Marsupials, I went from Jimbour to Pikedale, near Stanthorpe, where I succeeded during a stay of almost six weeks in acquiring for my cerebral investigations some material which is almost impossible to obtain in the cities, such as Brisbane or Sydney, and which, as I have learnt by my own experience, cannot be obtained even in the bush with great ease and quickness. I succeeded, however, in obtaining a number of brains of some species of the genera—*Macropus*, *Osphranter*, *Halmaturus*, *Petrogale*, *Phascolarctus*, as well as a few brains of *Ornithorhynchus* and *Echidna*.

At the end of December, last year, still availing myself of the kind hospitality of Mr. Donald Gunn, I went on to his other Station, Clairvaul, near Glen Innes, with the intention of collecting some fossils, and without great trouble, I got a series of interesting remains of *Diprotodon australis*, *Nototherium Mitchellii*, *Phoscolomys gigas*, *Macropus titan*, &c., &c.

Referring to the work done in Queensland, I will not neglect this opportunity to express, in the "name of Science," my most sincere thanks to *all* who have assisted me in my scientific work —the more so, that, through this assistance, I have been enabled to obtain much more satisfactory results than would otherwise have been the case. Especially important for me was the permission accorded me by the Queensland Government to use the old museum as a laboratory, and the use of the photographic apparatus of the Survey Office, where I obtained the excellent photographs of the brain which are exhibited. Among many in Queensland whose kindness I have experienced, I must mention, with especial gratitude, the name of the celebrated Australian traveller, Mr. A. C. Gregory, C.M.G. The six weeks of my stay at his residence, Rainworth, were for me both instructive and pleasant, owing to his extensive knowledge of different branches of science, and his wide experience as a traveller.

When I received in May, 1880, in Thursday Island, a letter from my friend, Mr. William Haswell, informing me that the Zoological Station in Sydney was not established, I determined not to leave Australia before the scheme had been carried out. Detained in Queensland by the work already referred to, I only arrived in Sydney in January of this year, and now, after a stay of one month, I have the pleasure to announce that I have every reason to believe that the Zoological Station at Watson's Bay will be opened in a short time. My stay in Brisbane has once more caused me to feel the *necessity* of such an institution for the biologist. I could expatiate at length on the advantages of a Zoological Station, but I content myself with remarking that, in spite of my great dislike to waste my time, I was obliged to spend many days, even weeks, in Brisbane and Sydney without the possibility of working, on account of the want of a suitable place. (Here I must express my thanks to Sir Henry Parkes for placing at my disposal the cottage in the Exhibition Ground—one of the present temporary Zoological Stations.")

I repeat again my conviction, grounded on long experience, that " the immediate need is not of apparatus or libraries, but of a place for undisturbed work."* I hope to be able, not later than in two months, to work in the Zoological Station in Watson's Bay. I am convinced that many men of science will avail themselves of it in future years; and I am satisfied to leave for future generations such a memento of my stay in Sydney as the *first Zoological Station in Australia.*

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*Vide " Proceedings of the Linnean Society of New South Wales," 26th August, 1871.

NOTES ON THE ZOOLOGY OF THE SOLOMON ISLANDS, WITH DESCRIPTIONS OF SOME NEW BIRDS.—Part II.

BY E. P. RAMSAY, F.L.S., C.M.Z.S., &c.

Having recently received a small collection of Birds from the Solomon Islands, I beg to lay before the Society a few remarks on the avifauna of that Group, with descriptions of such species as appear to me to be new. For the specimens under consideration I am chiefly indebted to Lieutenant Richards, R.N., of H.M.S. "Renard."

GRAUCALUS ELEGANS, *sp. nov.*

Graucalus hypoleucus, Ramsay, P.L.S., of N.S.W.

This species, so closely allied to *G. hypoleucus*, Gould, differs chiefly in having the jet black of the loreal region much broader and extending conspicuously below the eye, but does not reach the hinder margin of that organ; the bill is comparatively larger; the shoulders and wing-coverts are ashy-grey like the back; the chin and the whole of the under surface pure white, except the faintest tinge of grey across the chest; bill and legs black. Length 9 inches; wing 5·35; tail 4·5; tarsus 0·8; bill, from forehead 1·1, from gape 1·1, from nostril to tip 0·7.

Hab. Gaudalcanar, Solomon Islands, collected by J. Cockerell, junior.

GRAUCALUS SUBLINEATUS, *Sclater*, (P.Z.S., 1879, p. 448, pl. xxxvi.)

One specimen, male, this agrees in many respects with my description of the female of *G. solomonensis* (i.e. *G. pusillus*, P.L.S. N.S.W., Vol. IV., pt. 1.), but is considerably larger and the white cross lines do not extend so far up the breast. Black cross lines show on the lower part of the abdomen, but not on the upper; the spot in front of the eyes black. Length 9·2 inches; wing 5·35; tail 4·4; tarsus 1·05; bill from forehead 0·85.

Hab. Solomon Islands.

EDOLIISOMA SP.

? *Graucalus monotonus*, Tristram, Ibis, 1879, p. 441.

Edoliisoma marescotii, Ramsay, P.L S., N.S.W., IV. p. 71.

We have a male of this species of *Edoliisoma*, which agrees well with Mr. Tristram's description of *Graucalus monotonus*. It is of a uniform dark slaty-blue, wings and tail black, inner margin of the webs of the wing-quills below ashy-brown at the base, outer webs of primaries and secondaries like the back—centre tail feathers brownish, tip black; outer feather on either side margined at the tip with an ashy tint.

The female, cinnamon-brown on the head, hind-neck, and back; wings black, broadly margined with cinnamon-rufus on both webs above and below, the tail of a richer tint of cinnamon, shaded near the centre of the inner webs towards the base with ashy, lores and a spot behind the eye blackish-brown; chin, throat, under wing and tail-coverts and the rest of the under surface light cinnamon rufous.

Female.—Total length 8·3; wing 4·3; tail 3·7; tarsus 0·95; bill 0·95 inch.

Male.—Total length 8·3; wing 4·4; tail 3·6; tarsus 0·9; bill 1· inch.

It is not improbable that this is the *Edoliisoma salomonis* of Tristram, (Ibis 1879, p. 440), and that the discription has been taken from an immature specimen of a female.

SYMMORPHUS AFFINIS, Tristram, (Ibis, 1879, p. 440.)

This specimen, a female, seems to be identical with the "*Lalage sp.*" mentioned in my paper on the Birds of the New Hebrides, (P.L.S. of N.S.W., Vol. III., p. 338) the uropygium is however all white, but it has less white on the tips of the tail feathers.

PIEZORHYNCHUS RICHARDSII, *sp. nov.*

All the upper surface of the body, wings, and tail black, wings and tail below blackish-brown, the breast and all the under surface cinnamon rufous; the throat, chin, chest, lores, the forehead, and earcoverts black; eyelashes black; the occiput, nape, and hind-neck, and a ring round the eye white; the white from the hind-neck extending on to the sides of the neck, but not meeting on the throat. Bill blue, legs and feet black. Total length 5·7; wing 2·95; tail 2·55; tarsus 0·7; bill from forehead 0·7.

Hab. Island of Ugi.

This very distinct and beautiful species I propose to dedicate to my friend Lieut. Richards, R.N., who has done much to add to our knowledge of the Birds of the Pacific.

RHIPIDURA RUBROFRONTATA, Ramsay.

R. russata, Tristram, Ibis 1879, p. 440.

On comparing the type with others recently received, I find that the original specimen is not quite adult; the rufous chestnut of the back extends up to the hind-neck, covering the interscapular region; the black of the chest is reduced to a semilunar pectoral band, the breast is of a clearer white, and the flanks and abdomen are slightly tinged with rufous; the centre two tail feathers are not, or but very slightly tipped with white.

This bird was described by me under the specific name of *rubrofrontata*, and not as quoted by Count. Salvadori, *rufrofronta.* I do not hold myself responsible for printers' errors or for the digest of my paper sent to Nature. This species is undoubtedly the same as Mr. Tristram's *R. russata*, my type specimen not being quite adult.

PACHYCEPHALA CHRYSTOPHORI, Tristram, Ibis 1879, p. 441.

This is a good species, smaller than *P. astrolabi* (vel *P. orioloides*) and quite different in the females. *P. orioloides* has a black line bordering the lower mandible, and head *jet black* above.

MYZOMELA TRISTRAMI, *sp. nov.*

M. pammelæna, Tristram, (*nec.* Sclater) Ibis 1879, p. 439.

Adult male. A fine species above the average size, and of a uniform jet black colour, slightly shining; on the under surface of the wing the primaries show a margin of ashy white on their inner webs, which is widest at the base and does not extend to the tips of the feathers; the legs and feet black, the bill long and strong, curved, yellowish horn-colour, with the tip only black. Total length 4·8 to 5 inches; wing 2·7; tail 1·95; tarsus 0·8.

The young and the adult females have the under wing-coverts whitish, and the under surface more or less mixed with dull brown.

This species is probably the *Myzomela pammelæna,* mentioned by Mr. Tristram, (Ibis 1879, p. 439.) although that gentleman does not mention the *yellow bill,* which is not a sign of immaturity, as might be supposed, both adult males and females, as well as the young show this peculiarity. I have seen a smaller species, with a jet-black and more slender bill, from the South-east end of New Guinea.

MYZOMELA PULCHERRIMA, *sp. nov.*

The whole of the head, neck, chest, breast and sides of the body as far down as the flanks, the central portion of the interscapular region, back, rump, and upper tail-coverts rich deep crimson; a spot in front of the eye, the lower part of the flanks, central portion of the abdomen, under tail-coverts, wings and tail above and below, and the upper wing-coverts, black; the basal portion of the inner webs of the primaries and secondaries below of an ashy tint, under wing-coverts blackish-brown. Total length 4·9; wing 2·6; tail 1·75; tarsus 0·7; bill from forehead 0·85.

Hab. Ugi, Solomon Islands.

This species comes near *M. cardinalis* and *M. nigriventris,* (Peale) but is quite distinct from either, chiefly in extent of the scarlet on the under surface of the body, which reaches nearly to the thighs, it is also quite distinct from *M. rubratra,* (Less.)

TEPHRAS OLIVACEUS, *sp. nov.*

Adult male.—General colour above uniform dull brown, washed with olive, the forehead and sides of the face of a smoky-brown tint; the wings and tail blackish-brown, washed with olive on the outer webs of the feathers, the inner webs of the quills and axillaries below margined with white, or ashy-white; the throat, chest, sides, and flanks washed with light ashy-brown, becoming almost white on the abdomen, and under tail-coverts; bill and legs black.

There is no trace of white round the eye, the bill is long and pointed; the tail not rounded; the first and sixth primary quills are equal, and the third is equal in length to the fourth. Total length (skin) 4·6 inches; wing 2·7; tail 1·93; tarsus 0·77. Bill from forehead 0·6.

Hab. Solomon Islands.

This is the second species of this interesting genus *Tephras*,* now known, and closely allied to the genus *Zosterops*.

NASITERNA FINSCHII, *sp. nov.*

The whole of the plumage of a rich grass-green, paler on the abdomen; on the lower parts of the cheeks round the base of the lower mandibles the feathers are tinged with light greenish-blue; under tail-coverts light rich yellow; tail feathers blackish, outer webs green, the inner webs with a spot of bright yellow at the tip, decreasing in size to the fourth quill on either side; the centre two feathers bluish-green, shafts black. Length 3·8 inhces; wing 2·4; tail 1·25; tarsus 0·35; first toe (s.u.) 0·6; short hind toe (s.u.) 0·3.

Hab. St. Christoval. Sex ♀?.

This species comes near to the female *N. keiensis*, but has no trace of the yellow on the forehead which is green, uniform with the rest of the body, there is no black spot on the outer tail feathers.

**Hartlaub and Finsch*, P.Z.S., 1868, p. 6, pl. 3.

LORIUS CARDINALIS,

Specimens have been obtained by Baron N. de M.-Maclay at the Rongador Reef, 100 East of the Solomon Islands. The specimens were caught on the rigging of the schooner "Saidie F. Caller."

Count Salvadori, has intimated that my *Rhipidura Cockerelli*, is not a good species (see Ibis 1880, p. 129.) hinting that it might be an accidental variety of *Sauloprocta tricolor*. I do hope that after handling some hundreds of specimens of *S. tricolor* in all its varieties, I am not likely to mistake a bird so very distinct; has Count Salvadori compared my description with *S. tricolor* and *S. motacilloides*?

The same remarks are applicable to his note on my *Astur soloensis*, as being identical with *A. etorques*, of which latter I have seen over fifty skins from New Ireland and the Duke of York Group, &c. Living in a country where few works of reference are to be had, I am always glad to be set right as to matters of nomenclature, but I think my learned friends at the antipodes should wait until they have seen the specimens in question, or at least carefully compare the descriptions before expressing an opinion contrary to that of the author who has had the specimens before him.

ON SOME NEW AUSTRALIAN MARINE ISOPODA—Part II.

BY WILLIAM A. HASWELL, M.A., B.SC.

[Plates III. and IV.]

FAMILY IDOTEIDÆ.

Genus IDOTEA.

Idotea caudacuta, *sp. nov.*, Plate IV., fig. 4.

Length of body about three and two-thirds the greatest breadth. Head nearly twice as broad as long, front deeply concave.

Thoracic segments increasing slightly in breadth posteriorly. Epimera of first segment not distinct; those of second, third and fourth small; the rest larger; those of the sixth and seventh segments produced to an angle posteriorly. Greatest breadth of the abdomen more than half the length; in old specimens there is a low rounded mesial dorsal ridge; the extremity narrowing suddenly and rounded in old specimens but sub-acute in younger. Internal antennæ very short, scarcely reaching the extremity of the third joint of the peduncle of the outer pair; basal segment of the peduncle short and thick, quadrate; second segment shorter and much narrower than the first; third as long as the first, slender, cylindrical. External antennæ nearly equal in length to the head and first six segments of the thorax; three basal joints short and stout, fourth the longest; flagellum longer than the peduncle, tapering, composed of about twenty articuli. Colour very inconstant, sometimes olive-green, sometimes rich brown variously marked with bands of dull yellow. Length of largest specimen 1¾ in.

Hab. Griffiths' Point; Port Philip; Tasmania.

The nearest described ally of this species appears to be *I. stricta* of Dana, from which it is distinguished, among other points, by the much greater number of joints in the outer antennæ.

Idotea excavata, *sp. nou.*

Length of body about four and a-half times the greatest breadth. Head very small, much narrower than the thorax. Epimera of the last six thoracic segments distinct, increasing in size posteriorly—the last three acutely angulated behind. Abdomen about twice as long as broad, scarcely equal in length to the last four segments of the thorax, terminated posteriorly by a concave border bounded on either side by an acute tooth. Internal antennæ short, a little longer than the three basal segments of the peduncle of the outer pair: flagellum shorter than the last segment of the peduncle. Outer antennæ about two-thirds of the length of the body; the peduncle slightly compressed dorso-ventrally, the two last joints nearly equal in length, longer than the others; flagellum composed of about twenty articuli. Length 1¾ in.

Hab. Tasmania (Australian Museum).

Allied to *I. elongata*, Miers, but having the thorax very much broader in proportion to the length.

FAM. SPHÆROMIDÆ.

Genus CILICÆA, Leach.

The following four species together with two described in the first part of this paper all agree with the *Cilicæa Latreillii*, of Leach in having the penultimate segment of the abdomen prolonged, at least in the males, into a process or spine, in having the last segment dilated anteriorly, and more or less excavate at the apex—the excavation being with or without a central lobe—and in having the outer ramus of the uropoda incapable of folding under the inner. Of these *C. tenuicaudata*, *C. crassicaudata* and *C. crassa* agree with one another and with Leach's species, and differ from the other three, in having the immobile ramus of the uropoda rudimentary; but *C. crassa* again differs from *C. tenuicaudata* and *C. Latreillii*, and agrees with the other species mentioned, in having a mesial lobe in the centre of the posterior abdominal notch. Such differences are regarded as of generic value in this family, but for the present I prefer to retain all the species mentioned in the genus *Cilicæa*—the common characters afforded by the produced abdominal segment and other points constituting them a sufficiently natural group.

1. Cilicæa hystrix, *sp. nov.*, Plate III., fig. 1.

Head and body armed above with numerous slender, needle-like spines. Head short and broad, armed anteriorly with close-set, short, delicate spines, and with a pair of thicker bifurcate horns directed upwards, forwards, and outwards near the posterior margin. First segment of the thorax with a similar pair of bifurcate horns, its lateral border prominent, tridentate; following segments short, each with a single transverse row of slender spines, the lateral angles very acute—that of the fifth segment bifurcate. First abdominal segment with two prominent spines on its proximal dilated portion—the posterior process extending nearly as far as the extremity of the abdomen, forked at the tip. Last segment with two rounded elevations, each armed with several spines, with a deep, rounded terminal notch, immediately above which is a a prominent spine. Eyes large and prominent; antennæ subequal, nearly one-third of the length of the body. Mobile ramus of uropoda bifurcate, the outer branch short, tooth-like, the inner long, slender, spiniform; immobile ramus broad proximally, but slender and spiniform distally, its outer border armed with two acute teeth, its inner with one. Length ¾ in.

Hab. Port Stephens—five fathoms (Australian Museum).

2. Cilicæa spinulosa, *sp. nov.*, Plate III., fig. 3.

Head large and dilated, covered with rounded and pointed tubercles. First segment of the thorax much broader than the rest, armed with a number of short blunt spinules, and with a prominent bifid tubercle on either side; its lateral process obscurely bilobed. Following segments each armed with a row of short spinules which are more numerous and smaller on the last three segments; epimeral processes prominent, subacute, except that of the fifth, which is emarginate. First segment of the abdomen ornamented at the base with a double transverse row of tubercles; posterior process finely granular, sub-cylindrical, slightly enlarged or bifid at the apex, extending far beyond the extremity of the abdomen, but not so far as the extremity of the uropoda. Terminal segment having its lateral dilatation armed with two short thick spinules; terminal notch deep. Antennæ sub-equal, about one-third of the length of the body. Uropoda with the movable ramus slender, bifurcate, the outer branch short, tooth-like, the inner longer, slightly curved outwards, subacute; immobile ramus a little longer than the mobile ramus, broad at base, but tapering to the apex which is curved outwards and acute. Length ½ in.

Hab. Port Stephens and Port Jackson.

A near ally of the preceding species. Specimens from the same localities which are probably the females of this species (Plate III., fig. 2.) or of *C. hystrix* are distinguished by having all the spines of the body replaced by tubercles, by wanting the posterior process of the first abdominal segment. and by having the rami of the uropoda smaller.

Cilicæa curtispina, *sp. nov.*, Plate III., fig. 4.

Surface smooth. Head large, strongly arched, First and fourth segments of the thorax much broader than the others; epimera very distinct—their outer borders carinated. First segment of the abdomen finely granular, marked laterally with three depressed divisional lines, with two teeth on either side on its posterior border; posterior process short, blunt, rounded. Terminal segment having the lateral elevations pointed; terminal notch concealed from above by a prominent trilobed process the middle lobe of which is the largest. Internal antennæ separated by a tolerably large lobe; basal segment of the peduncle very large, more than half the length of the head, not much dilated, armed distally and internally with a blunt tooth; second segment scarcely half the length of the first, armed terminally with three small teeth; third segment very small; flagellum much shorter than peduncle. Outer antennæ more than a-third of the length of the body; last segment of the peduncle the largest; flagellum longer than peduncle. Mobile ramus of uropoda stout, truncate, armed with two acute teeth at its extremity and one about the middle of its outer border. Inner ramus very short, closely applied to the border of the terminal segment, ending in two sub-acute teeth. Length about ½ an inch.

Hab. Port Philip.

Cilicæa crassa, *sp. nov.*

Surface covered with rounded granules and a short pubescence. First segment of the thorax as long as the two following; lateral angles of the thoracic segments rather prominent, sub-acute. Process of first abdominal segment very thick, closely applied and cemented to the surface of the last segment, extending beyond the apex of the latter and ending in a broad bifid extremity. Last segment of the abdomen with two conical elevations: terminal notch wide; mesial lobe triangular, acute. Immobile ramus of uropoda rudimentary, mobile ramus notched externally towards the apex and with a low blunt tooth on the inner border. Colour light brown, with many of the granules and a line bordering the process of the first abdominal segment, bright crimson. Length 1 inch.

Hab. Port Jackson.

Genus ZUZARA, Leach.

Zuzara integra, *sp. nov.*, Plate III., fig. 6.

Male.—Surface nearly smooth. Body slightly depressed, increasing a little in breadth posteriorly, greatest breadth about half the total length. Head moderately convex, with a few flat granulations. First segment of the thorax nearly as broad as the two following; all the segments of the thorax sometimes marked laterally with a series of faint longitudinal impressed lines, sometimes completely smooth. Epimera very distinct, their lateral angles produced, sub-acute, that of the penultimate segment much produced backwards. Last segment of the thorax produced in the middle line behind into a rather slender process, which is about equal in length to the three preceding segments, sub-cylindrical, but depressed dorso-ventrally, not dilated at the apex which is truncate. First segment of the abdomen short, with well-marked divisional lines. Last segment convex, marked in the middle line near the proximal border with a faint key-hole-shaped depression, surrounded by a very obscure, granular elevation; terminal notch with a prominent narrow, clavate, mesial process. Inner antennæ separated at the base by a very small frontal process; basal segment of peduncle broad; second shorter and narrower; third slender, cylindrical, longer than the second, but not quite so long as the first and second together; flagellum rather longer than the peduncle. Outer antennæ with the peduncle stout, last joint the longest, flagellum nearly twice as long as the peduncle. Rami of the uropoda thin and leaf-like, immobile ramus falciform with a truncate apex; mobile ramus ovate-lanceolate in outline, concave upwards with a raised margin, much longer than the inner, and extending far beyond the extremity of the abdomen.

Female.—Differs from the male mainly (1) in wanting the posterior prolongation of the last thoracic segment, (2) in the absence of the terminal notch (3) in the smaller size of the uropoda the rami of which are nearly equal, the mobile ramus being capable of being entirely concealed under the inner.

A common species in Port Philip; also found in Tasmania.

I have placed this and the following species in the same genus with *Zuzara diadema* and *Z. semi-punctata* of Leach,* all three being characterised by the prolongation backwards of the last segment of the thorax in the male, and by the possession of a posterior mesial notch occupied by a slight median process. Both the species herein described have the outer ramus of the uropoda capable of folding underneath the inner. The present species differs from *Z. semi-punctata* in the process of the last thoracic segment not being granulous at the base or punctated above, and in having the outer ramus of the uropoda truncate instead of

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* Dictionnaire des Sciences Naturelles, tome xii., p. 344.

pointed. From *Z. diadema* it differs in not having the process of the last thoracic segment terminally dilated.

Zuzara emarginata, *sp. nov.*, Plate III., fig. 5.

Surface nearly smooth, very finely punctate. Head rather prominent, narrowing gradually towards the front. First segment of the thorax not quite so long as the two following taken together; sixth segment as long as the first; seventh segment very large, nearly concealing the abdomen; median posterior process very long, extending far beyond the extremity of the abdomen, slightly curved downwards, emarginate at apex—a prominent, acute tooth on either side of the segment near the base of the process. Last segment of the abdomen with a rounded swelling on either side. Terminal notch deep—about one-sixth of the width of the abdomen; mesial lobe very prominent, extending beyond the boundaries of the notch, truncate and faintly emarginate. Basal joint of the internal antennæ very large, notch for second joint wide with a prominent tooth on either side; third joint slender, not longer than the second, flagellum shorter than the peduncle. Outer antennæ much longer than the inner, more than a third of the length of the body, fourth and fifth segments of the peduncle subequal, flagellum longer than the peduncle. Outer ramus of uropoda subovate—the outer border nearly straight, the inner convex, the apex subacute; inner ramus of about the same length as the outer, bent directly backwards about the middle of its length, apex subacute; both rami fringed with hair. Colour light red with darker spots on the thorax. Length ½ inch.

The females and young males have the seventh thoracic segment small, the posterior process short or absent, the mesial lobe less prominent, and the uropoda relatively smaller.

Hab. Griffiths' Point, Western Port.

This species is apparently a tolerably near ally of *Cymodocea armata* of Milne-Edwards* (from Australia), but in the latter

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* *Hist. nat. Crust.*, tome 3, p. 215, pl. 31, fig. 16.

species the posterior prolongation of the seventh thoracic segment is described and figured as conical, and the posterior lobe as bifid.

Genus CYMODOCEA, Leach.

Cymodocea bidentata, *sp. nov.*

Body clothed with slender hairs which are scanty on the anterior thoracic segments, but longer (some about one-sixteenth of an inch) and more abundant on the abdomen and uropoda. Head strongly convex, smooth. First segment of the thorax longer than the two following together, ornamented with faint longitudinal lines of minute granules; lateral border strongly ridged; antero-lateral angle acute, postero-lateral rather blunt. Following thoracic segments more or less distinctly granular. First abdominal segment distinctly granular, produced backwards towards the middle dorsal line, with a short thick process on either side. Terminal segment with two large tubercles near the middle and a transverse line of three more near the distal extremity. Terminal notch wide, the median process prominent, broad, rounded at the extremity. Basal joints of the inner antennæ oblong, granular, separated by an acute frontal process; second joint small; flagellum about equalling the peduncle in length. Outer antennæ longer than the inner. Inner ramus of the uropoda longer than the outer, obliquely truncate, each terminating in a small acute spine. Length ½ inch.

Hab. Griffiths' Point, Victoria.

This species bears some resemblance to *C. Latreillii* of Leach, but the blunt form of the terminal lobe, as well as the shape of the uropoda etc., sufficiently distinguishes it.

Cymodocea trispinosa, *sp. nov.*, Pl. III., fig. 7.

Surface nearly smooth. Greatest breadth nearly half the length. First segment of the thorax scarcely so long as the second and third together. Outer border of all the thoracic segments ridged; epimeron of last segment produced backwards into an uncinate process. First abdominal segment short, with the divisional lines distinct; its posterior border with a wide shallow excavation bounded on either side by a rounded tooth with an obscure denticle internal to it. Last abdominal segment granular and hairy, with a low elevation about its middle. Posterior notch deep, its angles produced and acute, a little more prominent than the mesial lobe which is conical and acute. Outer ramus of uropoda longer than the inner, ovate-lanceolate, acute, inner extending beyond the extremity of the abdomen, acuminate. Colour uniform light red. Length 7/16ths inch.

Hab. Griffiths' Point, Victoria.

Cymodocea coronata, *sp. nov.*

Head and thorax as in *C. bidentata*, but with the hairs shorter. Abdomen rather depressed, covered with short hairs, ornamented with six small pointed tubercles arranged in a circle—two near the posterior border of the first segment, the rest on the second. Terminal notch very wide—nearly a third of the breadth of the abdomen: mesial lobe very large, dilated at its base, but narrowing towards its apex which is blunt. Mobile ramus of uropoda much shorter than the immoble ramus, sub-falciform, truncate. Inner ramus very long, extending far beyond the extremity of the abdomen, long-ovate, apex rounded. Length ½ inch.

Hab. Griffiths' Point, Victoria.

An ally of *C. aculeata*, mihi, but distinguished, besides other points, by the greater relative shortness of the mesial lobe and the smallness of the mobile ramus of the uropoda.

Cymodocea tuberculata, *sp. nov.*, Plate III., fig. 8.

Greatest breadth exactly half the total length. Head and first segment of body smooth—the latter equalling in length the three following segments together. Last six segments of the thorax each ornamented with a regularly arranged row of tubercles—their epimeral portion clothed with a long pubescence. First segment of the abdomen with two short triangular processes projecting backwards from its posterior border, separated from one another by an interval equal to a fifth of the breadth of the segment; on either side of this another, less prominent, tooth. Last segment with two compressed, irregular elevations near its proximal end, each formed by a cluster of five teeth; rest of the surface smooth. Lateral angles of the notch prominent, acute, projecting beyond the extremity of the mesial lobe, which fills up all the notch and is cemented to its borders except at the apex, which is rounded. Outer ramus of the uropoda very broad, spoon-shaped, closely fringed with hairs; inner narrower and shorter, but projecting a little beyond the angles of the notch. Length about ½ an inch.

Hab. Port Stephens, five fathoms.

Genus SPHÆROMA, Labr.

Sphæroma ? acuticaudata, *sp. nov.*, Plate III., fig. 9.

Greatest breadth of body about two-thirds of the total length. Head broader than long, bordered anteriorly and laterally by a thickened margin which is continuous with the eye; an obscure, mesial, longitudinal carina on the anterior half and a number of smooth, flattened tubercles. Surface of the thoracic segments smooth, each bordered with short hairs; first segment not so long as the two following taken together; lateral borders of thoracic segments carinate; the postero-lateral angles acute. Last segment of the abdomen slightly dilated—an acute spine about its centre, below which is a transverse band of short hairs; a deep, rounded median posterior notch, with prominent acute angles. Basal joint of internal antennæ much compressed, not much longer than broad, separated from its fellow by a small rounded frontal lobe; second joint sub-triangular, more than half the length of the first; third about half the length of the second and slender; flagellum rather shorter than the peduncle. Outer antennæ more than half the length of the body; terminal joint of the peduncle longer than the rest. Outer ramus of uropoda longer than the inner, projecting far beyond the extremity of the abdomen, lanceolate-acute, with an acute tooth on its inner border. Inner ramus extending slightly beyond the extremity of the abdomen, acuminate. Length ¾ in.

Hab. Griffiths' Point; Port Philip.

FAM. ÆGIDÆ.

Genus ÆGA, Leach.

Æga cyclops, *sp. nov.*

Surface finely punctured. Breadth about two-fifths of total length. Segments of the thorax subequal, epimera of last five produced behind to a point. Abdomen little narrower than the thorax. Terminal abdominal segment sub-triangular—the apex rounded. Eyes confluent, occupying nearly all the upper surface of the head. Uropoda with the outer ramus smaller than the inner, narrow, ovate-acute; the inner broad and obliquely truncate; an acute triangular process arising from the peduncle extends beyond the middle of the inner rami. Length 7/16ths in.

Hab. Port Jackson.

Genus CIROLANA, Leach.

Cirolana lata, *sp. nov.*, Plate IV., fig. 1.

Surface finely punctured. Greatest breadth about half the total length. Head received into a depression in the anterior border of the first segment of the thorax. First segment of the thorax as long as the two following segments; posterior segments all short; epimera of last four produced backwards to an acute angle. Abdomen much narrower than thorax. Terminal segment triangular, sub-acute. Legs thick and very spinose. Outer ramus of caudal appendages much narrower than the inner, but of about equal length, sub-acute; inner slightly sigmoid, sub-acute, armed with a tooth on its inner edge; basal spine narrow, acute, about half the length of the inner ramus. Length $\frac{5}{8}$ths inch.

Hab. Off Broughton Islands, near Port Stephens, dredged in about twenty-five fathoms.

FAM. TANAIDÆ.

Genus APSEUDES, Leach.

Apseudes australis, *sp. nov.*, Plate IV., fig. 2.

Head broad; a triangular acute rostrum between the bases of the antennæ, with a mesial and two lateral shallow grooves; a short spine in the middle of the epistome. Thoracic segments transverse, the epimera large, sparsely setose. Abdomen ornamented with a few longish fine hairs; terminal joint as long as all the rest together, twice as long as broad, rounded at the extremity. First joint of the internal antennæ long, compressed, longitudinally grooved; second joint scarcely one-third of the length of the first; third very small; flagellum as long as peduncle; secondary flagellum nearly two-thirds of the length of the principal flagellum. Lower (outer) antennæ scarcely longer than the flagellum of the upper; the second joint of the flagellum the largest, a lamelliform ovate appendage fringed with slender hairs situated at its inner and distal angle; third joint very small; fourth nearly as long as the second, but narrower; last joint smaller than the fourth; flagellum equal in length to about two-thirds of the peduncle, ornamented with slender hairs. First pair of thoracic limbs with the merus, carpus and propodos compressed, the merus triangular with its distal border transverse, with a strong seta at each distal angle and a few fine hairs; carpus smaller with its distal border oblique, a strong seta at its supero-distal angle; propodos narrower than the carpus but longer, its distal border short, transverse, a strong spine on either side of the point of insertion of the dactylos; rather compressed, slightly hooked at the end. Second pair of thoracic limbs with the basos very broad, a small tooth on its posterior border; a tooth on the lower border of the merus, carpus triangular, elongate, propodos dilated, its digital prolongation with a rounded lobe near the base. Length about ½ an inch.

Hab. Broughton Islands, dredged in about twenty-five fathoms.

Genus PARATANAIS, Dana.

Paratanais tenuicornis, *sp. nov.*, Plate IV., fig. 3.

Antennæ short; inner pair stout, the basal segment about three times as long at the second, and the latter twice as large as the last, which is very small. Outer antennæ more slender than the inner; last joint smaller than the penultimate, which again is as long as the two preceding taken together. First pair of legs very stout; propodos curved, dactylos slightly geniculate. Caudal appendages short, flagellum with seven articuli. Length about ¼ inch.

Hab. Port Stephens.

FAM. ARCTURIDÆ.

Genus ARCTURUS, Leach.

Arcturus longicornis, *sp. nov.*

None of the segments of the thorax greatly elongated. Head broader than long, longer than the first segment of the thorax; frontal border deeply concave. A pair of pointed spinous tubercles on the head, on each segment of the thorax and on each of the first two segments of the abdomen. Terminal segment sub-acute, with a pair of rounded tubercles near its apex. Internal antennæ longer than the head; first segment of the peduncle short and thick, second and third segments sub-equal. Outer antennæ with the peduncle equal in length to the head and thorax—the fifth joint much longer than all the rest together. Length, exclusive of antennæ, more than two inches.

The somewhat mutilated specimen from which the above description was taken was in the Australian Museum collection without locality attached, but pinned on a sheet of cork together with a number of specimens from Tasmania, and perhaps came from that colony. It differs from *A. Baffinii*, Sabine, as figured by Milne-Edwards, in the great length of the terminal segment of the peduncle of the outer antennæ—the fourth and fifth segments being represented as sub-equal in the figure of that species.

Arcturus brevicornis, *sp. nov.*, Plate IV., fig. 5.

Head rather shorter than the first three segments of the thorax, smooth; first three segments of the thorax subequal, short, each with one or two minute, rounded tubercles above; fourth segment much elongated, with a tubercle above—between the anterior end and the middle. Abdomen as long as the last three segments of the thorax. Outer antennæ thick, about as long as the head and first four segments of the thorax, second and third segments subequal, fourth the longest, fifth longer than the second; fourth and fifth each with three or four short setæ below; flagellum about two-thirds of the length of the last segment. Anterior limbs subequal, slender, first slightly stouter than the rest. Length of body about ⅜ths inch.

Hab. Off Broughton Island, near Port Stephens, dredged in about twenty-five fathoms.

EXPLANATION OF PLATES III.—IV.

Plate III.

Fig. 1.—*Cilicæa hystrix* × 3½.
„ 2.—Female of the same (?) × 3½.
„ 3.—*Cilicæa spinulosa.*
„ 4.—*Cilicæa curtispina* × 4.
„ 5.—*Zuzara emarginata.*
„ 6.—*Zuzara integra* × 3.
„ 7.—*Cymodocea trispinosa* × 3½.
„ 8.—*Cymodocea tuberculata* × 3½.
„ 9.—*Sphæroma acuticaudata* × 3½.

Plate IV.

Fig. 1.—*Cirolana lata* × 4.

,, 2.—*Apseudes australis* × 4; 2*a*.—internal antennæ; 2*b*.—first pair of thoracic legs; 2*c*.—second pair × 22.

,, 3.—*Paratanais tenuicornis* × 4; 3*a*.—internal antennæ; 3*b*.—external antennæ; 3*c*.—caudal appendages; 3*d*.—first pair of legs × 22.

,, 4.—*Idotea caudacuta;* natural size.

,, 5.—*Arcturus brevicornis* × 8; 5*a*.—first pair of legs; 5*b*.—second pair of legs × 44.

NOTES AND EXHIBITS.

Baron Maclay exhibited photographs and dissections of the brains of a Malay, Chinaman, and Australian Aboriginal; drawings of the brain of *Echidna Hystrix*, and various marsupials; photographs of the hairless family, Ballonne River; and many other sketches and photographs made during his last tour.

Dr. Cox exhibited a series of fossil seeds procured from a shaft sunk for gold at the Forest Diggings between Carcoar and Orange and at a depth of over 100 feet below the surface. They belong to the genera *Pentonne*, *Spondylostrobus*, *Phymatocarzon*, *Rhytidocarzon*, and three not determined.

Mr. Haswell exhibited the *Isopoda* described in his paper.

Mr. Ramsay exhibited a large number of Solomon Island and New Guinea Birds.

Mr. Brazier, C.M.Z S.,—A *Voluta mammilla* from Tasmania, a young specimen three inches long; also Part 9 of Vol. III., of Tryons Manual of Conchology *(Tritonidæ)*.

Hon. Wm. Macleay—A fine series of *Gorgonias* and rare shells from Endeavour and Torres Straits.

Dr. Cox desired to record the distribution of *Leucosia splendida*, described in Mr. Haswell's paper page 60, Proc. Linn. Soc. N.S.W., Jan. 1879, which had recently been found in great numbers up the Tweed River, their habitat being damp leaves and sand just above water mark.

Mr. Brazier exhibited a rare *Helix* from Travertine in Kent's Group, forwarded by Mr. T. Stephens for identification. It is allied to *H. Aphrodite* from the Solomon Islands belonging to the group *Corasia*, which is common in the Phillipine and Solomon Islands. The occurrence therefore of this form in the Travertine of the Kent's Group, indicates a very much warmer and indeed tropical climate as prevailing far to the southward during the time this Travertine was deposited.

Mr. Palmer exhibited photographs of Blacks from the Lachlan, Edwards, Bogan, Murray, and other districts.

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WEDNESDAY, MARCH 30TH, 1881.

The President, Dr. J. C. Cox, F.L.S., in the Chair.

Dr. Coppinger, Mr. Whittell, Mr. Chambers and Mr. Catton were introduced as visitors.

MEMBERS ELECTED.

Dr. P. Lucas, of Bank Street, Emerald Hill, Melbourne.

Mr. J. R. Goldstein, Office of Titles, Melbourne.

DONATIONS.

Royal Society of Tasmania, Transactions for 1880.

Bulletin of the Museum of Comparative Zoology, Harvard College, Vol. 8, No. 2.

Bremen Society of Natural History, Report for 1880.

Royal Microscopical Society, London, Vol. 3, Nos. 6 and 6a.

Meteorological Observations, Sydney, 1876—1879.

Report of the Auckland Museum, 1880.

PAPERS READ.

DESCRIPTION OF A NEW *Labroid* FISH OF THE GENUS *Novacula*, FROM PORT JACKSON.

BY E. P. RAMSAY, F.L.S., C.M.Z.S., &c.

FAM. LABRIDÆ.

NOVACULA JACKSONENSIS, *sp. nov.*

D. 2/7-12. A. 3-12. V. 1-5. Lat. line 28.

Indications of scales on the cheek; orbits and snout bare; the two anterior dorsal spines flexible, produced—the second slightly longer than the first, quite separate from the rest of the rays; the third shorter than the first; the anterior contour of the head parabolic, edge sharp. The eye four and one-fourth diameters in the head, the head four and one-third lengths in the total; the height of the body is about three times and one-third in the total length, its greatest height is opposite the ventral fins. The outer ventral ray is produced, reaching nearly to the anal. Anal rays twelve, the spines three, the first short and weak, the third the longest. Caudal fin rounded, the outermost rays on either side very short; the last anal ray reaching to the base of the caudal. Pectoral fin five-sevenths the length of the head. Lateral line interrupted on the twenty-second scale, continued on the third row lower down on the body, over six scales, but not on to the tail, terminating two rows in front of the tail; from the vent there are ten to eleven rows below the lateral line and three to four rows above it; there are thirty scales along the body, and about fifteen in an oblique line from the vent to the last dorsal spine. Two strong canine teeth in front in each jaw, the lower fitting in between the upper, the other teeth in both jaws well developed conical—no posterior canine tooth visible.

Colour greenish opaline, almost translucent when alive, tinged with orange along the anal fin, and with an oblong, indistinct, orange patch behind the eye, commencing on the forehead above and anterior to that organ; tail with alternate pale blue and dull orange bars, five in number; indistinct pale lines of the same tints on the membranes of the dorsal and anal fins, faint indications of blue spots on the scales on the abdominal and caudal regions. Eye bright orange.

This specimen is a young individual, with the coloration indistinct and but imperfectly developed; the adult will probably be of a bright orange tint, with blue spots on each of the body-scales and blue and orange bars on the tail and fins.

Caught at Manly Beach, Port Jackson. I believe that it is the first species of this genus recorded from Port Jackson.

NOTE ON THE OCCURRENCE ON THE COAST OF NEW SOUTH WALES OF THE GENUS *Mesenteripora*, BL., *(Polyzoa Cyclostomata)*.

BY WILLIAM A. HASWELL, M.A., B.SC.

Among an interesting series of *Polyzoa* obtained with the dredge off Broughton Islands to the north of Port Stephens during the recent dredging excursion organised by the Australian Museum, were a number of specimens of the remarkable cyclostomatous genus *Mesenteripora*. Most of them were attached to the laminæ of a species of *Biflustra*, or the thick cylindrical branches of a species of *Cellepora*, which was obtained in large quantity.

The genus *Mesenteripora* was established by Blainville (Manuel d'Actinologie) for one recent and several fossil species of *Polyzoa* which he regarded as allied to *Eschara*. Milne-Edwards (Ann. des Sci. Nat. 2d série, tome ix., p. 226, 1838) pointed out their true affinities with the Cyclostomata, and D'Orbigny in 1852 (Prodr. de Palæont. stat.) described several fossil species from the Cretaceous of France, and subsequently (Paléontologie Française, tome v., 1852) added descriptions and figures of several more fossil species. In 1844, S. Wood (Ann. and Mag. Nat. Hist., xiii., p. 14) had described a fossil species from the Crag which he named *Diastopora meandrina;* this species was afterwards described and figured by Busk (Fossil Polyzoa of the Crag, p. 109, pl. xvii., fig. 2, pl. xviii., fig. 4, and pl. xx., fig. 2—1859), and is said to have been obtained in the recent state off the coast of Greenland by Torell.

In the species described by Blainville, Milne-Edwards, Wood, and D'Orbigny, the polyzoarium assumed a lamellate-foliaceous, erect character, which induced the first named author to regard the genus as having a place in the *Escharidæ*. In the Australian variety on the other hand the polyzoarium never seems to assume this form. It is primarily flat and encrusting, growing outwards in a radiating or fan-like manner from the primary cell. In this stage the general form of the polyzoarium is very similar to that of *Tubulipora*, and closely resembles the young stage of *Mesenteripora meandrina* as figured by Busk (l. c., pl. xx., fig. 9). At the periphery the cells are three or four deep, the upper ones sometimes free to a slight extent, but never very prominent; wherever the lower layers come in contact with an obstacle (such as a Serpula-tube) there is a tendency in the upper cells to take a direction almost vertically upwards. The marginal cells are usually bilabiate, the lips being generally unequal and acute, but sometimes the peristome is circular and entire. The cells of the upper layer as the margin grows out beyond them become less prominent, though still projecting a little above the surface of the polyzoarium, and become closed in by a punctated calcareous lamina, which grows over the mouth and is usually perforated in the centre by a slender projecting tube, the orifice of which is also sometimes in turn closed in; this tube is usually about a sixth to an eighth of the whole diameter of the mouth, but sometimes much less, and projects from the mouth of the cell to a length equal usually to about four or five times its own diameter. The form of these cells is nearly that figured by Busk as occurring in *M. meandrina*, with the exception of the central tubule, the place of which seems to be taken in the latter by a simple pore with a slight raised margin.

In process of growth the polyzoarium pushes out from its periphery radiating processes the cells in which have the same divergent tendency as in the original subcircular colony, and neighbouring processes as they widen come into contact in such a manner that the mouths of their marginal cells of each process are obliquely opposed to those of the margin of the contiguous process, and the result is that, in order to make room for further growth, there is a curving upwards of the margins of these processes as they come into contact—a thick septum being formed between the cells of the contiguous processes. The outcome of this mode of growth is the formation of a series of radiating, low, thick, ribs or walls rising from the plane surface of the polyzoarium —each rib essentially consisting of the upturned edges of two contiguous lobes of the latter, separated by a mesial vertical septum. The flat portion of the polyzoarium meanwhile grows out from between these ribs until by a repetition of the same process, a second series of ribs may become formed external to the first. These ribs are usually not very high, rarely projecting more than a tenth of an inch above the general surface; a few of their marginal cells on either side are usually greatly elongated, projecting far beyond the others; the septum projects as a thin lamina well up beyond the cells contiguous to it.

As the present species appears to be distinct from *M. meandrina*,* and does not appear to be identifiable with any of the strictly fossil species, I propose for it the name of *M. repens* in reference to its creeping habit.

NOTE ON A SPECIMEN OF MALFORMED *Cypræa*.

BY J. BRAZIER, C.M.Z.S., &c.

Cypræa poraria.

Back very dark purple (destitute of the white dots and brown rings that are to be found in the typical form), base and the sides purple violet the inner and outer lips excavated very deep at each end, wide apart, produced in the middle; the teeth white, eighteen on the outer lip, extending nearly across to the margin, some short, and others elongated; fourteen on the columella side thickened and rounded at each end, aperture shaped like the figure eight.

This specimen was found by Mr. R. C. Rossiter, on the reefs at the Island of Ouen, New Caledonia. Length 12. Alt. 7. breadth 9 lines.

DESCRIPTIVE CATALOGUE OF THE FISHES OF AUSTRALIA.

BY WILLIAM MACLEAY, F.L.S., &c.

Part IV.

ORDER IV. *PHYSOSTOMI.*

All the fin rays are articulated; only the first of the dorsal and pectoral fins is sometimes more or less ossified. The ventral fins, if present are abdominal, without spine. Air-bladder, if present, with a pneumatic duct.

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* In general habitat it resembles *Reticulipora dorsalis*, of Waters; but the form of the cells sufficiently distinguishes it.

FAMILY I. SILURIDÆ.

Skin naked or with osseous scutes, but without scales. Barbels always present; maxillary bone rudimentary, almost always forming the base of a maxillary barbel. Margin of the upper jaw formed by the intermaxillaries only. Suboperculum absent. Air-bladder generally present, communicating with the organ of hearing by means of the auditory ossicles. Adipose fin absent or present.

Genus PLOTOSUS, Lacep.

A short dorsal fin in front, with a pungent spine; a second long dorsal is united with the caudal and anal into one fin, which is pointed behind. Teeth in the upper jaw conical, on the vomer molar-like, in the lower jaw mixed. Barbels eight: one immediately before the posterior nostril, which is distant from the anterior, the latter being quite in front of the snout. Cleft of mouth transverse. Eyes small. The gill membranes are separate from each other, not attached to the isthmus. Branchial arches without particular cartilaginous posterior process and without posterior membrane. Ventral fins many-rayed. Head depressed.

Coasts of Indian and Polynesian Seas.

802. PLOTOSUS ANGUILLARIS, Lacep.

Gunth., Cat. Fishes, V., p. 24.—Cant. Fishes Mal., p. 264.

Plotosus arab, Bleek., Atl. Ichth. Silur., p. 98, tab. 95, fig. 2.

B. 12. First D. 1/4-5. Second D.+C.+A. 169-189. P. 1/11. V. 12. Vert. 12/35.

The length of the head is about one-fifth of the total length (without the caudal fin), the height of the body one-seventh or one-eighth. Barbels not very long: those of the nostril extend to the eye, and those of the maxillary are about half as long as the head. Brown or black, generally with two white longitudinal bands, the upper of which commences at the snout, and runs above the eye along the base of the dorsal fin; the lower proceeds from the maxillary barbel along the middle of the side of the body. Vertical fins with dark margin.

Moreton Bay, Endeavour River, and Port Darwin.

803. PLOTOSUS UNICOLOR, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 141.

Eight barbels, about as long as half the space from the anterior margin of the snout to the base of the first dorsal fin, those of the nostrils extending considerably behind the eye; length of head over four times and two thirds in the total length, height of body over six times in the same; the diameter of the eye less than half the length of the snout. Head rather pointed in front, the dorsal spine straight and acute; rays of first dorsal, four. Ventrals rather long, of twelve rays; pectorals of one long spine and nine rays. Colour uniform dark brown, almost black. Length about seven inches.

In waterholes in the interior of Western Australia.

804. PLOTOSUS ELONGATUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 237.

Brisbane River (fresh-water) Norman River.

Genus NEOPLOTOSUS, Casteln.

All the characters of *Plotosus*, but with the teeth all similar; soft, molar-like, they form a strip on the palate and a band on the vomer.

Australia.

805. NEOPLOTOSUS WATERHOUSEI, Casteln.

Researches on the Fishes of Australia, p. 45.

First D. 1/3. Second D.+C.+A. 140. P. 1/10. V. 10.

The height of the body is contained eight times and one-third in the total length, the length of the head five times; barbels not very long; those of the nostrils extend to the eyes; those of the maxillary not further; the highest of the mandibulary barbels is the longest, being about as long as the snout, the lower shorter. Eye very small, its diameter about one-eighth of the length of the head and one-third of that of the snout. The snout is depressed; the body is compressed, elongate, and tapers to the tail. General colour (in spirits) light grey, with the lower parts yellow; the fins yellowish, bordered with black; a few small irregular spots on the body and dorsal fin.

Adelaide. Length five inches.

Genus COPIDOGLANIS, Gunth.

A short dorsal fin in front, with a pungent spine; a second long dorsal is united with the caudal and anal into one fin. Teeth in the upper jaw conical, on the vomer molar-like, in the lower jaw mixed. Barbels eight; nostrils as in *Plotosus*. Cleft of the mouth transverse. Eyes of moderate size, with a free orbital margin. The gill-membranes are separated by a deep notch, united anteriorly only, the united portion not attached to the isthmus. The first branchial arch with a fringed membrane along the hinder edge of its concave side. Ventral fins many-rayed. Head rather compressed.

Coasts and rivers of Australia and East Indian Archipelago.

806. COPIDOGLANIS TANDANUS, Mitchell.

Gunth., Cat. Fishes V., p. 26.

"*The Cat Fish*" of the Murrumbidgee.

B. 9. First D. 1/6. Second D.+C.+A. 142. P. 1/10. V. 12.

Head and body compressed; the height of the body is not much less than the length of the head, which is a little more than one-fifth of the total. Head as high as broad, its greatest width being three-fifths of its length; the diameter of the eye is contained five times and a-half in the length of the head, twice and a-half in that of the snout, and twice in the width of the interorbital space. The nasal barbels are a little shorter than those of the maxillary, and extend to the middle of the eye. The band of teeth of each intermaxillary bone is twice as broad as long; the vomerine teeth are arranged in a semicircular disk, those of the mandibularies form a band which is broadest in the middle; all the teeth of conical form have a brown tip. The first dorsal fin is nearly as high as the body, and its spine more than half as long as the head. Pectoral spine as strong as, but much shorter than that of the dorsal fin. Uniform blackish-brown above.

Rivers of New South Wales. Length from two to three feet.

807. COPIDOGLANIS OBSCURUS, Gunth.

Gunth., Cat. Fishes V., p. 26.

First D. 1/6. Second D.+C.+A. 226. P. 1/14. V. 15-16.

Head not much compressed, but nearly as high as broad, its width being two-thirds of its length. The height of the body is contained eight times and a-half in the total length, the length of the head six times and a-third; the diameter of the eye is one-sixth of the height, two-fifths of that of the snout, and three-fifths of the width of the interorbital space. The nasal barbels extend to behind the eye, those of the maxillary to the gill-opening. Each intermaxillary with a triangular band of teeth, which is rather broader than long; vomerine band crescent-shaped. All the teeth are white. The first dorsal fin is placed immediately behind the nape and is as high as the body, its spine is more than half the length of the head. Pectoral spine as strong as, but much shorter than that of the dorsal fin. Brown: fins with black margin.

Australia ? (Gunther).

808. Copidoglanis brevidorsalis, Gunth.

Ann. and Mag. Nat. Hist. 1867, Vol. XX., p. 66.

Differs from the preceding species in having the anterior portion of the second dorsal fin replaced by a pad of fat, from which the rays gradually emerge behind; the anterior portion does not contain any rays. The anal fin is composed of about eighty-five rays. The nasal barbel extends to the origin of the dorsal fin, none of the others reach beyond the extremity of the pectoral. The eye is one-seventh of the length of the head. Entirely black.

Cape York. Nicol Bay. Length six inches.

809. Copidoglanis longifilis, *n. sp.*

First D. 1/4. Second D.+C.+A. 160. P. 1/11. V. 12.

The height of the body is rather less than one-sixth of the total length, and is less than the length of the head. The body is compressed and tapers to the tail; the head is rather depressed with the eyes on the upper surface; the distance from the eye to the snout is equal to three diameters of the eye, and the width of the interorbital space to two diameters. The lips are extremely verrucose, with two prominent nasal flaps on the upper; the teeth in both jaws and on the roof of the mouth are strong, bluntly conical, and distant. The barbels are very long, the nasal ones reaching to the first dorsal fin. The first dorsal fin is somewhat pointed and more than half the height of the body. The colour seems to have been black or very dark brown.

Long Island, Torres Straits. Length thirteen inches.

Genus Neosilurus, Steind.

A genus distinguished from *Copidoglanis* by the rudimentary condition or entire absence of the anterior part of the second dorsal fin. The *Copidoglanis brevidorsalis*, Gunth., should perhaps be referred to this genus.

810. NEOSILURUS HYRTLII, Steind.

Sitzgsber. Ak. Wiss. Wien. 1867, p. 14.

I have never seen Steindachner's description of this species, but I think it very probable that it is identical with a fish which I have received from a river of Northern Queensland, and of which the following is a description.

First D. 1/4. Second D.+C.+A. 115. P. 1/9. V. 13.

Body very compressed, its height about equal to the length of the head, and one-fifth of the total length; the diameter of the eye is about one-fifth of the length of the head, is contained twice in the length of the snout, and more than twice in the width of the interorbital space. None of the barbels reach the eye. The second dorsal fin commences about one-fifth of the length of the body from the tail, the rays at first are very short, but lengthen gradually to the middle of the caudal fin which is pointed, the rays of the anal also lengthen gradually to the tail. The colour seems to have been reddish-brown, white beneath.

River of Northern Queensland. Length seven inches.

Genus CNIDOGLANIS, Gunth.

A short dorsal fin in front, with a pungent spine; a second long dorsal is united with the caudal and anal into one fin, pointed behind. Teeth in the upper jaw conical, on the vomer molar-like, in the lower jaw mixed. Barbels eight or more; nostrils as in *Plotosus*. Cleft of the mouth transverse. Eyes small. The gill-membranes are united below the throat, and attached to the isthmus along the entire median line. The second and third branchial arches with a series of long cartilaginous processes, covering the base of the gill-laminæ on the sides facing each other. Ventral fins many-rayed.

Rivers and Coasts of Australia.

811. CNIDOGLANIS MEGASTOMA, Richards.

Gunth., Cat. Fishes V., p. 27.

Plotosus megastomus, Rich., Voy. Erebus and Terror, p. 31, pl. 21, figs 1 and 3.

Chæroplotosus decemfilis, Kner., Novara, Fisch. p. 300, t. 13, fig. 1.

B. 11. First D. 1/4. Second D.+C.+A. 234. P. 1/9. V. 10.

Head very broad and depressed, its length being one-fifth of the total (without caudal). Ten barbels, (there being two pair of maxillaries) not very long; those of the nostril and maxillary extending somewhat behind the eye. Lower lip broad, pendent, with lobes, the outer of which is situated below the maxillary barbels and has the appearance of a short barbel. The intermaxillary teeth are small, conical, and form two small patches; those of the lower jaw form a broad band, tapering on the side, the outer series of which is formed by conical teeth, the remainder being molar-like. Vomerine teeth in a large triangular patch. Eye small, covered by the skin. Uniform blackish-brown above.

Port Jackson.

812. CNIDOGLANIS LEPTURUS, Gunth.

Gunth., Cat. Fishes V., p. 28.

First D. 1/5. Second D.+C.+A. 212. P. 1/9. V. 11.

Head depressed, its width being three-fourths of its length, which is one-seventh of the total; tail long, much produced and pointed behind. The nasal and maxillary barbels extend to the end of the head; lower lip not pendent or fringed. Intermaxillary teeth conical, in two small patches; those of the mandible in two triangular bands, molar-like, with an outer series of conical ones. Eye small. The first dorsal fin is lower than the body, and placed at a very short distance from the occiput; its spine is feebly serrated, one-third or not quite one-third as long as the head; pectoral spine as long and strong as that of the dorsal fin. Uniform black.

Port Jackson. Length fourteen inches.

813. Cnidoglanis microcephalus, Richards.

Voy. Erebus and Terror, p. 31, pl. 21, figs. 4-7.—Gunth., Cat. Fishes V., p. 28.

First D. 1/5. Second D.+C.+A. 210. P. 1/10. V. 12.

Head rather depressed, small, its length being one-eighth of the total length. Nasal barbels long, extending to the dorsal fin, which however is placed at a short distance from the occiput Maxillary barbels reaching the gill-opening; lower lip without fringes. The intermaxillary teeth form two triangular patches, those of the vomer a crescent-shaped band. Eye rather small. The first dorsal fin elevated, and produced into a long point. Brown, with numerous small, round, whitish spots.

North-west Coast of Australia.

814. Cnidoglanis Bostockii, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 140.

This species seems to resemble *C. megastoma* in almost every particular excepting that the nasal barbels are always much shorter, not passing the centre of the eye. The first dorsal fin has five rays; the second dorsal, caudal and anal united about two hundred and twenty rays; and the ventrals ten. Colour in spirits black, becoming browner beneath.

West Australia. Length twenty-one inches.

Genus Silurichthys, Bleek.

One very short dorsal fin without pungent spine; no adipose fin; anal and caudal fins confluent. Barbels four; one to each maxillary, and one to each mandible. Palatine teeth none; vomerine teeth in a short transverse band; eyes rather small, above the angle of the mouth. Nostrils remote from each other, subequal in form and width. Head and body covered with soft skin. The upper profile of the head straight. The dorsal fin is inserted above, or immediately before the ventrals. Ventrals composed of eight or less rays; caudal obliquely emarginate.

East Indian Archipelago. Cashmere.

815. SILURICHTHYS AUSTRALIS, Casteln.

Researches on the Fishes of Australia, p. 45.

The height of the body is contained six times in the length, without the caudal fin, the length of the head four times and three-quarters. Eight barbels,* those at the corner of the mouth shorter than the others; the upper jaw is longer than the lower; the dorsal is inserted before the vertical from the ventrals. Colour silvery, with the upper parts of a greenish-grey; the entire body and fins covered with numerous and minute black markings.

Cape York. Length four and a-half inches.

Genus CAINOSILURUS.

Neosilurus, Castelnau, Proc. Linn. Soc. N.S.W., Vol. II., p. 238.

I substitute this name for *Neosilurus* previously appropriated by Dr. Steindachner.

816. CAINOSILURUS AUSTRALIS, Casteln.

Neosilurus australis, Casteln., Proc. Linn. Soc. N.S.W., Vol. II., p. 239.

Freshwater, Rockhampton.

Genus EUMEDA, Casteln.

Proc. Linn. Soc. N.S.W. Vol. III., p. 143.

817. EUMEDA ELONGATA, Casteln.

Proc. Linn. Soc. N.S.W.. Vol. III., p. 144.

Brisbane River. Rockhampton.

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* This is not in accordance with the characters given of the genus.

Genus Arius, Bleek.

Adipose fin of moderate length or short; a short dorsal fin with a pungent spine and seven soft rays; anal fin rather short. Head osseous above; barbels six, four at the mandible, no nasal barbels. Teeth on the palate fixed, the upper jaw longer. Eyes with a free orbital margin; the anterior and posterior nostrils placed close together, the posterior with a valve. Caudal fin forked; ventral with six rays, attached behind the vertical from the dorsal. Gill-membranes not confluent with the skin of the isthmus, with free posterior margin.

Tropical regions.

818. Arius thalassinus, Rupp.

Gunth., Cat. Fishes V., p. 139.—Bleek., Atl. Ichth. Silur., t. 61.

D. 1/7. A. 16-17. P. 1/11. Vert. 18/27.

The height of the body is contained from four times and three-quarters to five times and two-fifths in the length, (without caudal), the length of the head four times and a-quarter or three and a-half. Head much broader than high; snout obtuse in young specimens; the adult fish with the upper jaw pointed, and projecting much beyond the lower. The teeth on the palate are villiform and form a pair of more or less separate subtriangular patches, each of which is composed of three portions. The maxillary barbels extend to the opercles or to the pectoral fin. Crown of the head granulated; occipital process triangular, rather longer than broad, elevated in its middle into a longitudinal ridge; the basal bone of the dorsal spine is small, crescent-shaped. Dorsal spine of moderate strength, granulated in front, slightly serrated behind; its length equals that of the head without snout; the dorsal rays are as high as the body. Adipose fin very short. Pectoral spine stronger, and but little shorter than the dorsal spines.

Torres Straits. Port Jackson.

819. Arius gagorides, Cuv. & Val.

Gunth., Cat. Fishes V., p. 140.

D. 1/7. A. 17. P. 1/12.

The height of the body is rather less than one-fourth of the length (without caudal), the length of the head two-sevenths; head much broader than high, its greatest width being equal to the distance of the hinder nostril from the end of the opercle. The teeth on the palate are in two pairs of confluent patches, those on the palatine bones are large, broad, and emarginate posteriorly. Six barbels, shorter than the head. Crown of the head granulated, the granules being arranged in radiating series; occipital plate triangular, elevated into an obtuse ridge along its middle, rather broader than long; the basal bone of the dorsal spine is of moderate width, narrowest in the middle, each half slightly bent into an S-shaped form. Dorsal spine strong, as long as the head without snout, granulated in front, and obtusely serrated behind, as high as the soft portion of the fin, or as the body underneath. Adipose fin somewhat shorter than the dorsal. Pectoral spine as long as that of the dorsal fin, granulated exteriorly and serrated inferiorly. Ventral fins much shorter than the pectoral, not extending to the anal. Caudal fin deeply forked.

Port Darwin.

820. Arius australis, Gunth.

Gunth., Proc. Zool. Soc., London, 1867, p. 103.

D. 1/7. A. 16-17. P. 1/10.

The height of the body is contained from four times to four times and a-half in the length (without caudal), the length of the head thrice and a-third or thrice and a-fourth; the greatest width of the head is five-sixths of its length. Occipital process as long as, or longer than broad, granulated, with a very obtuse median ridge, extending to the small basal bone of the dorsal fin. Eye of moderate size, much nearer to the snout than to the extremity of the operculum, the length of the snout being nearly one-half of that of the post-orbital portion of the head; upper jaw somewhat longer than the lower. The teeth on the palate form a broad arched band, the vomerine patches being slightly separated from the palatine, and either perfectly continuous in the middle or but slightly interrupted. The maxillary barbels extend to, or sometimes not quite to, the root of the pectoral fin; the outer ones of the mandible, to the gill-opening. Dorsal spine strong, half as long as the head, slightly serrated in front and behind. Adipose fin as long as, or shorter, than the dorsal, its length being less than one-third of the distance between the two fins. Pectoral spine stronger and a little longer than that of the dorsal fin; ventral fins more or less shorter than the pectorals. Porus axillaris minute. Sides of the body silvery, upper parts uniform blackish.

Hunter River. Richmond River.

821. ARIUS CURTISII, Casteln.

Proc. Linn. Soc. N.S.W., Vol. II., p. 236.

Moreton Bay.

822. ARIUS VENATICUS, Richards.

Bagrus venaticus, Rich., Voy. Erebus and Terror, p. 33.—Gunth. Cat. Fishes V., p. 174.

D. 1/9 or more. A. about 30. P. 1/13. V. about 8.

Head strongly granulated above; apex of the occipital process where it meets the small crescentic buckler of the dorsal fin, slightly rounded. Dorsal spine serrated anteriorly and a little undulated posteriorly; the pectoral spine is equal in length to the dorsal one, and is strongly serrated on both sides. The teeth are villiform. The front of the vomer supports two small roundish dental plates, which adhere to each other. The palatine plates are both broader and longer, upper lobe of tail longest. Barbels six. (Richards.)

North-west Coast of Australia.

823. ARIUS VERTAGUS, Richards.

Voy. Ereb. and Terr., Fish., p. 33.—Gunth., Cat. Fishes V., p. 174.

B. 6. D. 1/6-7. A. 28. P. 1/9. V. 9?.

The dorsal spine is equal in length to the space between its base and the orbit, and is shorter than the pectoral spine, which is strongly serrated on both sides. Head granulated above, with the occipital process crescentic at the apex. The vomerine teeth are disposed in two small separate plates, and the palatine teeth form a still smaller plate near each corner of the mouth. Barbels six. Length three inches.

North-west Coast of Australia.

The last two species were described by Sir John Richardson from very imperfect specimens.

FAMILY II. HAPLOCHITONIDÆ.

Body naked or scaly. Margin of the upper jaw formed by the intermaxillary; opercular apparatus complete. Barbels none. Gill-opening wide; pseudobranchiæ well developed. Air-bladder simple. Adipose fin present. Ovaries laminated; the eggs fall into the cavity of the abdomen, there being no oviduct. Pyloric appendages none.

Genus PROTOTROCTES, Gunth.

General habit of *Corregonus*. The scales on the front part of the body irregularly arranged in series descending obliquely forward. The dorsal fin occupies a position somewhat posterior to that of the ventrals, which are in the middle of the length of the body, and composed of seven rays. Adipose fin, small; caudal emarginate; anal of moderate length. Eye of moderate size. Teeth minute, in a single series in the jaws, on the vomer and on the palatine bones. Gill-openings rather wide, the gill-membranes not attached to the isthmus. Branchiostegals six.

Australian Rivers.

824. Prototroctes maræna, Gunth.

Gunth., Cat. Fishes V., p. 382. "*The Yarra Herring.*"

B. 6. D. 10. A. 19. P. 13. V. L. lat. 78. L. transv. 19.

Body compressed, the height about one-fourth of the length (without caudal); the belly strongly compressed, the scales on one side not extending to the other, leaving a naked groove from the ventrals to the anal. Head small, terminating in a conical snout, with the upper jaw longest; the snout rather longer than the diameter of the eye, which is one-fourth of the length of the head, and equal to the width of the convex interorbital space. The cleft of the mouth extends to below the anterior margin of the orbit; the maxillary and intermaxillary are very solid bones, firmly adherent to one another and extending equally far backwards. A single series of minute teeth on the intermaxillary, vomer, and palatine bones. The cheek and opercular apparatus are naked. Operculum quadrangular. The dorsal fin midway between the oral and caudal extremities; caudal emarginate; the pectorals are rather longer than the ventrals. Scales moderate, irregular, thin and cycloid; no lateral line. Greenish-olive; sides and belly silvery. Length ten inches.

Rivers of Victoria and Tasmania.

Family III. SCOPELIDÆ.

Body naked or scaly. Margin of the upper jaw formed by the intermaxillary only; opercular apparatus sometimes incompletely developed. Barbels none. Gill-openings very wide; pseudobranchiæ well developed. Air-bladder none. Adipose fin present. The eggs are enclosed in the sacs of the ovarium and excluded by oviducts. Pyloric appendages few in number or absent. Intestinal tract very short.

Genus SAURUS, Cuv. & Val.

Body sub-cylindrical, rather elongate, covered with scales of moderate size; head oblong; cleft of the mouth very wide; intermaxillary very long, styliform, tapering; maxillary thin, long, closely adherent to the intermaxillary. Teeth cardiform, some being elongate, slender; all can be laid downwards and inwards; teeth in the jaws, on the tongue, and on the palatine bones, those on the palate form a single band on each side. Eye of moderate size. Pectoral fin short; ventral eight-rayed, the inner rays much longer than the outer; it is inserted before the dorsal, and not far behind the pectorals. The dorsal fin is situated nearly in the middle of the length of the body, with thirteen or less rays; adipose fin small; anal short or of moderate length; caudal forked. Gill-opening very wide, the gill-membranes not attached to the isthmus; branchiostegals numerous. Pyloric appendages few in number.

Tropical parts of the Atlantic and Pacific. Mediterranean.

825. SAURUS MYOPS, Cuv. & Val.

Gunth., Cat. Fishes V., p. 398.—Bleek., Atl. Ichth. Saurid., tab. 2., fig. 3.

B. 16. D. 12. A. 15-16. L lat. 56-58. L. transv. 3½/7.

The length of the head is two-sevenths of the total length (without caudal); crown of the head and occiput finely corrugated; interorbital space deeply concave. Snout rather obtuse, short, shorter than the eye, with the lower jaw a little projecting beyond the upper. Dorsal fin as high as long; the pectoral extends to the tenth scale of the lateral line; the ventral to, or nearly to, the vent. Tail compressed. Scapula black.

Port Jackson.

Genus SAURIDA, Cuv. & Val.

This genus differs from *Saurus* only in having a double band of teeth on the palatine bones on each side, the inner band being the shorter, and in having the ventrals nine-rayed, the inner rays not much longer than the outer ones.

Indian Ocean and Western Pacific.

826. SAURIDA NEBULOSA, Cuv. & Val.

Gunth., Cat. Fishes V., p. 399.—Bleek., Atl. Ichth. Saurid. tab. 2, fig. 1.

B. 13. D. 11. A. 9. V. 9. L. lat. 52. L. transv. 3½/6.

Snout somewhat pointed; orbit with the adipose eyelids moderately developed. The pectoral fin extends to the ninth scale of the lateral line. A rather inconspicuous ridge along the caudal portion of the lateral line. Dorsal and caudal fins with brownish-black dots; the brown spots on the side of the body extend to below the lateral line.

Port Jackson.

827. SAURIDA UNDOSQUAMIS, Richards.

Voy. Erebus and Terror, p. 138, pl. 51, f. 1-6.—Gunth., Cat. Fishes V., p. 400.

B. 15. D. 11. A. 11. V. 9. L. lat. 57-58. L. transv. 4½/7.

Snout broad and obtuse; orbit with the adipose eyelids moderately developed. The pectoral fin extends to the eleventh scale of the lateral line, and nearly to the vertical from the origin of the dorsal fin. A conspicuous ridge along the caudal portion of the lateral line. A series of small brown spots on the upper caudal ray.

North-west Coast of Australia.

828. SAURIDA AUSTRALIS, Casteln.

Proc. Linn. Soc. N.S.W., Vol. III., p. 393.

Port Jackson.

829. SAURIDA GRANDISQUAMIS, Gunth.

Gunth., Cat. Fishes V., p. 400.

B. 15. D. 12-13. A. 11. V. 9. L. lat. 49. L. transv. 4/6-7.

The length of the head is contained four times and one-third in the total length (caudal excluded); snout broad, obtuse, a little longer than the diameter of the eye, which is contained five times and a-half in the length of the head; orbit with the adipose eyelids moderately developed. Dorsal fin much higher than long, the third (longest) ray being not much shorter than the head. The pectoral fin extends to the twelfth scale of the lateral line, and nearly to the vertical from the origin of the dorsal. A conspicuous ridge runs along the caudal portion of the lateral line Blackish-olive above, silvery beneath; the anterior rays of the dorsal fin, and the upper ones of the caudal with brown dots.

Cape Grenville (Chevert Exp.)

830. SAURIDA TRUCULENTA, *n. sp.*

B. 14. D. 11. A. 11. L. lat. 58. L. transv. 4/6.

Height of body one-tenth of the total length, length of the head nearly one-fifth. Head broad and flat above, and rather pointed at the snout. The eye is large and partially covered on each side by an adipose membrane; the length of the snout from the eye is about equal to the largest diameter of the orbit. The space between the eyes has a width of rather more than two diameters of the eye, and has a broad shallow groove in the middle; immediately above the snout there is a bony protuberance, over each eye a sharp horizontal ridge and behind these in the same line, one or two small, sharp protuberances. The teeth are extremely large and numerous. The scales are large and rather loose; they commence on the occiput. The pectoral fin extends to a little beyond the commencement of the ventral, and these are placed entirely in front of the dorsal, which commences nearly opposite their posterior third. The two first rays of the dorsal are higher than the body. The adipose fin is opposite the third last anal ray. Caudal fin forked, the rays very strong. Colour in spirits, brownish above, whitish beneath; fins yellowish. Length twenty inches.

Port Jackson.

831. SAURIDA ARGENTEA, *n. sp.*

B. 13. D. 12. A. 10. L. lat. 55. L. transv. 5/8.

Height of body one-tenth, and length of head one-seventh of the total length. The head is flat above and tapers to a rounded snout, which is considerably longer than the diameter of the eye; a short ridge behind the occiput, behind the line of the back. The pectoral fin does not nearly reach the ventral, which is placed only a very little in front of the vertical from the dorsal. Caudal fin forked; dorsal higher than long, the first rays much higher than the body. Colour bluish above, whitish beneath, most of the scales showing a silvery centre, the middle rays of the tail blackish. Length seven inches.

Endeavour River.

Genus AULOPUS, Cuv.

Head and body rather elongate, slightly compressed, covered with scales of moderate size. Cleft of the mouth very wide; maxillary well developed, dilated behind. Teeth small, cardiform, in bands in the jaws, on the vomer, palatine, and pterygoid bones, and on the tongue. Eye of moderate size. Pectoral and ventral fins well developed; the latter nine-rayed, inserted close behind the pectorals, below the anterior dorsal rays. Dorsal fin in the middle of the length of the body, rather elongate, with fifteen or more rays; adipose fin small; anal of moderate length; caudal forked. Gill-opening very wide; branchiostegals numerous; pseudobranchiæ well developed. Pyloric appendages few. Air-bladder none.

Mediterranean. Australia.

832. AULOPUS PURPURISSATUS, Richards.

Gunth., Cat. Fishes V., p. 403.

"*Sergeant Baker*" of the Fishermen.

D. 19-22. A. 13-14. V. 9. L. lat. 51. L. transv. 6/9.

The length of the head is contained thrice and one-fourth in the length of the body (caudal fin excluded); the second and third dorsal rays produced into a long filament in the males. The colours of this fish are very brilliant, consisting chiefly of purple and red.

Port Jackson; rare in Melbourne.

Genus CHLOROPHTHALMUS, Bonap.

Head and body rather elongate, rather compressed behind, covered with scales of moderate size. Cleft of the mouth wide; maxillary well developed, dilated behind. Teeth minute, in narrow bands in the jaws, on the vomer, the palatine bones and the tongue. Eye large. Pectoral and ventral fins well developed; the latter nine-rayed, inserted at no great distance behind the pectorals, somewhat behind the origin of the dorsal fin. Dorsal fin somewhat before the middle of the length of the body, short, with eleven or twelve rays; adipose fin small; anal short; caudal forked. Gill-opening very wide; branchiostegals ten; pseudobranchiæ well developed.

Mediterranean. Australian Seas.

833. CHLOROPHTHALMUS NIGRIPINNIS, Gunth.

Gunth., Ann. and Mag. Nat. Hist. 1878, Vol. II., p. 182.

B. 7. D. 11. A. 9. L. lat. 50.

The length of the head is contained thrice and three-fourths in the total length (without caudal). The eye is large, two-fifths of the length of the head, and three times the width of the interorbital space. The distance of the adipose fin from the dorsal equals that between the latter and the front margin of the eye. Teeth in the jaws, on the vomer and palatine bones, in very narrow bands. Pectoral fins rather shorter than the ventral, which extends far beyond the vent, the vent being much nearer to the ventral than to the anal. Silvery, with some very indistinct darker spots on the sides of the body; top of the dorsal fin and extremity of each caudal lobe black.

Off Twofold Bay, 120 fathoms. (Challenger.)

Genus SCOPELUS, Cuv.

Body oblong, more or less compressed, covered with large scales, those of the lateral line being generally the largest. Series of phosphorescent spots run along the lower side of the head, body, and tail, and a similar substance occupies the front of the snout and the back of the tail. Head generally compressed, with the bones thin but ossified. Cleft of the mouth very wide. Intermaxillary very long, styliform, tapering; maxillary well developed. Teeth villiform, in bands, in both jaws, on the palatine and pterygoid bones, and on the tongue; the vomerine teeth are not visible except in the large specimens. Eye large. Pectoral and ventral fins well developed, the latter are eight-rayed, inserted immediately in front of the dorsal, or below its anterior portion, at some distance behind the base of the pectoral. Dorsal fin in, or nearly in, the middle of the length of the body; adipose fin small, sometimes fimbriated. Anal fin generally long; caudal forked. Gill opening very wide; the outer branchial arch extending forward to behind the symphysis of the lower jaw, and beset with very long gill-rakers. Branchiostegals from eight to ten. Pseudobranchiæ well developed. Air-bladdder small. Pyloric appendages in small number.

Pelagic Fishes of all Seas.

834. SCOPELUS CUVIERI, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 106.

D. 12. A. 19. V. 8. P. 17. L. lat. 41.

The height of the body is contained three times and eight-tenths in the total length; the length of the head four times; the diameter of the eye twice in the length of the head. Anterior profile very convex; nostrils large and inflated; lower jaw longer than the upper; the teeth are numerous and villiform; the maxillaries reach to the end of the præoperculum, are very slender, gradually widen posteriorly, and end in an oblique curve. The eye is very large. The scales are rather deciduous and ciliated, very large on the opercles and broad on the lateral lines. The dorsal fin is situated nearer to the snout than to the base of the caudal, the two first rays are short, the first shortest; the anal the same; the pectorals reach as far back as the ventrals, which are rather in advance of the dorsal. The adipose fin is broad, arched, pointed, and placed above the end of the anal; two sharp spines on the lower profile between the anal and the caudal fins. Colour a brilliant and iridescent silver; the fins bright yellow.

Torres Straits (Castelnau).

835. SCOPELUS BOOPS, Richards.

Myctophum boops, Richards., Voy. Erebus and Terror, p. 39, pl. 27, figs. 6-12.

D. 14. A. 20. P. 15. V. 8. L. lat. 35.

The height of the body and the length of the head about equal, and one-fifth of the total length. The eye large, exceeding in diameter the width of the interorbital space. The luminous substance forming a conspicuous frontal keel. The dorsal fin is placed above the beginning of the ventrals; the pectorals reach the anus. The body is ornamented with a number of opalescent dots with a black border.

The sea between New Zealand and Australia (Richards.).

836. Scopelus coruscans, Richards.

Myctophum coruscans, Richards., Voy. Erebus and Terror, p. 40, pl. 27, figs. 1-5.

D. 12. A. 20. P. 17. V. 8. L. lat. 38.

More compressed than *S. boops*, tapering to a very slender tail. The eye is a little removed from the profile and is placed rather in advance of the middle of the cleft of the mouth. The interorbital space is convex, without any appearance of the glandular substance, which seems to be confined to the immediate border of each nostril. An elevated acute mesial line separates one nasal prominence from the other. The ventral fins are attached at the commencement of the second third of the length of the fish, caudal excluded. The dorsal commences a little behind them; and the upper surface of the tail behind the adipose fin, is covered by six convex scales, without the flat surface or glandular appearance of the preceding species. The posterior rays of the dorsal and anal are divided to the base. No spines at the base of the caudal. The scales are undulated, very irregularly and sparingly toothed on the free edge, and with three basal furrows. Coloured and spotted as in *S. boops*.

Australian Ocean (Richardson).

836. Scopelus cephalotes, Casteln.

Researches Fishes of Australia, p. 46.

D. 9. A. 10. P. 12.

The height of the body is one-fourth of the total length, the length of the head one-third; form rather elongate; upper profile not very convex; eye very large, contained three times and a-quarter in the length of the head; lower jaw considerably longer than the upper one, and when the mouth is shut it appears pointed and directed upwards, the cleft of the mouth being very oblique; teeth very numerous, placed very near one another, and directed backwards; the maxillary extends further than the centre of the eye; body covered with scales placed in transverse lines, and finely striated; one dorsal situated at near the two posterior thirds of the body; it is narrow, but high, and formed of one spine and eight rays; caudal rather pointed; anal with three spines and seven rays; the first spine is short, the second longer, and the third much longer still, and almost equal to the rays; the pectorals of twelve rays extend to the end of the ventrals; no adipose fin; the highest part of the fish is at the posterior part of the head, and from thence its form goes tapering to the end of the tail. The body, in the spirits, appears to have been of a lilac colour, covered in a great part by a pearl-coloured tinge; very minute black dots are seen on the greatest part of the body, and several marmorated spots appear on some of the specimens; the fins are of a light yellow, with some black dots at their base. The specimens are about one inch and a-half long.

Adelaide.

Count Castelnau suggests *Neoscopelus* as a new genus for this Fish. It certainly does not fit in well to the genus *Scopelus*.

Genus ALEPIDOSAURUS, Lowe.

Body elongate, rather compressed, scaleless; head compressed with the snout much produced, and with the cleft of the mouth very wide; intermaxillary very long and very slender; maxillary thin, needle-like, as long as the intermaxillary, immoveable. Teeth very unequal in size, immoveable. A series of very small teeth runs along the entire length of the intermaxillary. Teeth of the palatine bone compressed, triangular, pointed, the two or three anterior ones being exceedingly long and strong, and the posterior ones of moderate size. Teeth of the lower jaw similar to those of the palatine bones, one pair in front, and two or three pairs in the middle being much enlarged. No teeth on the tongue. Eye large; pectoral and ventral fins well developed. The rayed dorsal fin occupies the whole length of the back from the occiput to the anal fin. Adipose and anal fins of moderate size. Caudal forked. Gill-opening very wide. Branchiostegals six or seven. The outer branchial arch with stiff, shortish spine-like gill-rakers. Pseudobranchiæ well developed. Air-bladder none.

Ocean Fishes, Atlantic and Pacific.

837. ALEPIDOSAURUS FEROX, Lowe.

Gunth., Cat. Fishes V., p. 421.—Richards., Voy. Erebus and Terror, p. 34, pl. 22, figs. 1-4.

B. 6-7. D. 41-44. A. 14-17. P. 14-15. V. 9-10.

The length of the head is twice the height of the body, and rather less than one-sixth of the total length, (without caudal). The eye occupies the middle of the length of the head, of which it is one-sixth; its diameter equals the width of the interorbital space. Dorsal fin much elevated. Pectoral elongate, but terminating at a great distance from the ventral; the first ray of the dorsal, pectoral, and ventral fins with the edge slightly serrated. Upper caudal lobe produced into a long filament.

Tasmania (Richardson).

FAMILY IV. STOMIATIDÆ.

Skin naked or with exceedingly fine scales; a hyoid barbel. Margin of the upper jaw formed by the intermaxillary and maxillary, which are both toothed; opercular apparatus but little developed. Gill-opening very wide; pseudobranchiæ none. Adipose fin absent or present. The eggs are enclosed in the sacs of the ovarium, and excluded by oviducts.

Deep Sea Fishes.

Genus ECHIOSTOMA, Lowe.

Body elongate, compressed, scaleless, with the vent situated at no great distance from the caudal fin. Head rather compressed, with the snout short, and the cleft of the mouth very wide. Teeth pointed, unequal in size, those of the intermaxillary and anterior part of the mandible being the longest; maxillary teeth in a single series, those of its lower two-thirds being very small; teeth of the hinder part of the mandible in a double or treble series; vomer with a pair of fangs; palatines with a single series of small, pointed teeth; two groups of similar teeth on the tongue, Eye of moderate size. Opercular portion of the head very narrow and flexible. A fleshy barbel is suspended from the centre of the hyoid region. Dorsal fin opposite the anal, close to the caudal; caudal forked. Pectoral and veutral fins feeble, the latter inserted behind the middle of the length of the body. Series of phosphorescent dots run along the lower side of the head, body, and tail. Gill-openings very wide; the outer branchial arch with minute gill-rakers; pseudobranchiæ none. Air-bladder none.

Atlantic and Pacific Oceans.

838. ECHIOSTOMA MICRODON, Gunth.

Ann. and Mag. Nat. Hist., 1878, Vol. II., p. 180.

D. 24. A 29. P. 3. V. 7.

The length of the head is more than one-fifth of the total length (without caudal). No separate pectoral ray; root of the ventral considerably nearer to the base of the caudal than to the extremity of the snout. All the teeth rather small, a few only in the middle of the palatine bone. Black; two luminous organs below the eye; a narrow elongate one above the maxillary, and a small, short one nearer the eye.

North-west Coast of Australia, 2,440 fathoms (Challenger).

839. ECHIOSTOMA MICRIPNUS, Gunth.

Ann. and Mag. Nat. Hist., 1878, Vol. II., p. 180.

D. 21. A. 23. P. 1/3. V. 7.

The length of the head is nearly one-ninth of the total length. Barbel much longer than the head, and fringed at its extremity;

the anterior pectoral ray filamentous, and distinctly separated from the others. Root of the ventral rather nearer to the extremity of the snout than to the root of the caudal. Black; luminous organ above the maxillary small, round, like a rudimentary eye.

South Coast of Australia, 2,150 fathoms (Challenger)

FAMILY V. SALMONIDÆ.

Body covered with scales; head naked; barbels none. Margin of the upper jaw formed by the intermaxillaries mesially, and by the maxillaries laterally. Belly rounded. A small adipose fin behind the dorsal. Pyloric appendages generally numerous, rarely absent. Air-bladder large, simple; pseudobranchiæ present. The ova fall into the cavity of the abdomen before exclusion.

Genus RETROPINNA, Gill.

Body covered with scales of moderate size. Cleft of the mouth of moderate width. Small teeth, subequal in size, in single series on the jaws, vomer, palatines and pterygoids; tongue with a double series of small hooked teeth. Dorsal fin situated far backwards, behind the ventrals, above the vent; anal rather long; caudal forked; ventral six-rayed. Pseudobranchiæ present. Stomach horseshoe-shaped, without prolonged blind sac; pyloric appendages and air-bladder present.

Freshwaters, New Zealand and Australia.

840. RETROPINNA RICHARDSONII, Gill.

Proc. Acad. Nat. Philad., 1862, p. 14.—Gunth., Cat. Fishes VI. p. 171.

Argentina retropinna, Richards., Voy. Erebus and Terror, p. 121, pl. 52, figs. 1-3.

B. 6. D. 11-12. A. 17-20. P. 11. V. 6. L. lat. 61.

The height of the body is less than the length of the head, which is contained four times and two-thirds in the total length (without caudal). Snout shorter than the eye, the diameter of which is two-sevenths of the length of the head. The lower jaw is the longer. Coloration uniform, with a silvery band along the side.

Rope's Creek. Length three inches.

FAMILY VI. GALAXIDÆ.

Body naked; barbels none. Margin of the upper jaw chiefly formed by the intermaxillaries, which are short and continued by a thick lip, behind which are the maxillaries. Belly rounded. Adipose fin none; dorsal opposite to anal. Pyloric appendages in small number. Air-bladder large, simple; pseudobranchiæ none. The ova fall into the cavity of the abdomen before exclusion.

Genus GALAXIAS, Cuv.

A series of conical teeth in the jaws, on each palatine bone, and on each side of the tongue; teeth on the tongue hook-like.

Rivers of Australia, New Zealand and Southern parts of South America.

841. GALAXIAS TRUTTACEUS, Cuv. & Val.

Gunth , Cat. Fishes VI., p. 209.—Richards., Voy. Erebus and Terror, p. 75, pl. 42, figs. 1-6.

B. 9. D. 11. A. 14-15. V. 7. P. 14.

Body stout; head broad, depressed, its length being somewhat more than the height of the body, and two-ninths or a little less of the total length (without caudal). Jaws equal in length. Cleft of the mouth of moderate width, the maxillary not quite extending to below the middle of the eye. Eye of moderate size, two-ninths of the length of the head and shorter than the snout. The length of the pectoral fin is one-half of the distance of its root from the ventral, and the ventral terminates at a considerable distance from the vent; the anal, if laid backwards, extends scarcely to the base of the caudal. The least depth of the tail is somewhat more than one-half of the distance between the caudal and dorsal fins. Dark olive-coloured, with numerous, small, round, blackish spots; two or three dark cross-bars above the pectoral fin; an oblique, blackish streak below the eye; extremities of the dorsal, anal, and pectoral fins black.

Tasmania.

842. Galaxias olidus, Gunth.

Gunth., Cat. Fishes VI., p. 209.

D. 11. A. 13. P. 14. V. 7.

Body stout; head thick, its length being about equal to the height of the body, and two-ninths of the total length (without caudal). The lower jaw is a little shorter than the upper; cleft of the mouth of moderate width, the maxillary not quite reaching to below the middle of the eye. Eye rather small, less than one-sixth of the length of the head, and much shorter than the snout. The length of the pectoral fin is less than one-half of the distance of its root from the ventral, and the ventral fin terminates at a considerable distance from the vent; the anal fin, if laid backwards scarcely reaches the base of the caudal. The least depth of the tail is one-half of the distance between caudal and dorsal fins. Brownish-red above, yellowish-red below; all the fins and opercles with thick black dots; a few scattered similar dots on the side of the tail.

? Queensland (Gunther). Length four inches.

843. Galaxias attenuatus, Jenyns.

Gunth., Cat. Fishes VI., p. 210.

G. scriba, (not Cuv. & Val.) and *G. maculatus*, (not Jenyns), Richards., Voy. Erebus and Terror, p. 75-76, pl. 43, figs. 14-17.

D. 11. A. 17. P. 12. V. 7. Cæc. pylor. 2.

Body elongate, its depth in front of the dorsal fin being one-eighth or one-tenth of the length (without caudal); the length of the head nearly one-sixth of the same. Snout with the jaws equal in length; cleft of the mouth rather narrow; the maxillary extending to below the anterior margin of the orbit. Eye of moderate size, somewhat shorter than the snout, more than one-fifth of the length of the head. The length of the pectoral fin is much less than one-half the distance of its root from the ventral, and that of the ventral is about one-third of the distance of its root from the anal. The least depth of the tail is one-half of the distance between the dorsal and caudal fins. Caudal emarginate. Yellowish-olive, body with numerous faint spots, each spot being composed of minute dots. Operculum silvery.

Tasmania.

844. GALAXIAS KREFFTII, Gunth.

Gunth., Cat. Fishes VI., p. 211.

D. 12. A. 16. P. 12. V. 7.

Body moderately elongate, subcylindrical, its depth in front of the dorsal fin being contained seven times and one-half in the total length (without caudal); the length of the head is five times and a-half in the same. Snout broad, with the jaws equal in length; cleft of the mouth rather narrow; the maxillary extending to nearly below the front margin of the orbit. Eye of moderate size, as long as the snout, one-fourth of the length of the head. The length of the pectoral fin is considerably less than one-half of the distance of its root from the ventral; and that of the ventral is two-fifths of the distance of its root from the anal. The least depth of the tail is one-half of the distance between the dorsal and caudal fins. Caudal truncate. Yellowish-olive (in spirits); back powdered with minute black dots.

New South Wales. Rope's Creek. ? Murray River.

845. GALAXIAS SCRIBA, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 212.

D. 11. A. 15. P. 14. V. 7.

The height of the body is one-half of ths length of the head, which is one-fifth of the total length (without caudal); the diameter of the eye is only two-fifths of the length of the head. Caudal fin truncate. Yellowish: minute black dots are crowded so as to form irregularly fluxuous lines; a large blotch at the base of the caudal fin.

Port Jackson (Val.) Length three inches.

846. GALAXIAS PUNCTATUS, Gunth.

Gunth., Cat. Fishes VI., p. 212.

D. 12. A. 16. P. 12. V. 7.

Body elongate, its depth in front of the dorsal fin being one-eighth of the length (without caudal); the length of the head one-sixth of the same. Snout with the jaws nearly equal in length; cleft of the mouth rather narrow, the maxillary extending nearly to below the anterior margin of the orbit. Eye two-thirds of the length of the snout, and less than one-fifth of the length the head. The length of the pectoral fin is nearly one-third of the distance of its root from the ventral, and that of the ventral two-fifths of the distance of its root from the anal. The least depth of the tail is one-half of the space between the dorsal and caudal fins. Caudal fin emarginate. Light brownish-olive: upper half of the head and body with numerous small, black spots or dots.

Eastern Creek. Length six and a-half inches.

847. GALAXIAS COXII, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. V., p. 45.

Mount Wilson. Falls for the Colo River.

848. Galaxias planiceps, *n. sp.*

D. 11. A. 13. P. 14. V. 6.

The height of the body immediately in front of the dorsal fin is one-eighth of the total length (without caudal); the length of the head about one-fifth of the same. The top of the head very flat and depressed; the mouth is rather large and slightly oblique, the maxillary reaching to below the middle of the eye. Eyes rather large, two diameters apart, one diameter from the snout, and over four times in the length of the head. The length of the pectoral fin is considerably less than half the distance of its root from the ventral; the length of the ventral is two-fifths of the distance of its root from the anal. The caudal fin is broad, spreading, and slightly emarginate. The colour, in spirits, is an uniform pale red, with the fins and head yellowish; there are no spots or dots visible anywhere.

Rankin's Lagoon near Bathurst.

849. Galaxias bong-bong, *n. sp.*

D. 11. A. 11. P. 14. V. 7.

The greatest height of the body is one-fifth of the length (without caudal); the length of the head the same. The snout is rounded in front; the maxillary reaching to below the anterior third of the eye. The length of the pectoral fin is nearly one-half the distance of its root from the ventral, and that of the ventral is quite half the length of the space between the root of the ventral and the anal. Caudal fin very slightly emarginate, its membrane extending very considerably on to the upper and lower portions of the tail, and almost continuous with the anal fin. The colour in spirits is red, more or less densely spotted and clouded with black, the vertical fins slightly tinged with blackish. Length three inches.

Moss Vale and rivers at Bong-bong.

850. Galaxias nebulosa, *n. sp.*

D. 12. A. 18. P. 14. V. 7 or 8.

The height of the body at the pectoral fin is one-ninth of the length (without caudal); the length of the head one-fifth; the diameter of the eye is about one-fourth of the length of the head. Snout rounded; the maxillary reaches to below the anterior third of the eye. The middle rays of the pectoral fin are the longest and its length is rather more than half the space between the root of the pectoral and that of the ventral, the length of the ventral is about half that of the distance between the roots of the ventral and anal. Caudal fin long, not or scarcely emarginate. Colour in spirits, pale yellowish-brown, entirely and closely covered fins and all with exceedingly minute black dots, with five or six irregular, little distinct, brown fasciæ descending from the back below the middle of the sides, sometimes a few large spots in the interspaces between these fasciæ. Length three inches.

Long Bay near Sydney.

851. Galaxias Waterhousei, Krefft.

Proc. Zool. Soc., London, 1867, p. 943.

D. 11. A. 15. P. 13. V. 7.

Body stout, its depth in front of the dorsal fin being nearly one-eighth of the length (without caudal); the length of the head is a sixth of the same. Eye of moderate size, one-fourth of the length of the head, and equal to the extent of the snout. The length of the pectoral fin is one-third of the space between its root and that of the ventral; the ventrals are of the same length, and almost in the middle between the vent and the root of the pectorals. The anal if laid backwards does not reach the base of the caudal. The distance between the dorsal and caudal fin is much greater than the least depth of the tail. Coloration uniform brownish; back and sides finely black-dotted; operculum with a golden tint.

Creeks, South Australia. Length seven inches.

852. GALAXIAS OCELLATUS, M'Coy.

Casteln., Proc. Zool. Soc., Victoria, Vol. I., p. 175.

"The Yarra Trout."

D. 11. A. 15. P. 14. V. 7.

The height of the body is contained five times and one-third in the total length; the length of the head five times and two-thirds. The head is convex over the eye. The caudal fin is rounded; the ventrals are nearer to the anal than to the pectorals. The body is of a light olive green, with the belly grey; it is covered with iridescent round ocellated black spots; the sides of the operculum have a golden tinge; the fins are of the general colour of the body; the pectorals are white, the eye is green, speckled with black.

River Yarra. Length six inches.

853. GALAXIAS CYLINDRICUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 177.

D. 10. A. 12-14. V. 7.

Like *G. attenuatus*, but more elongate, the height of the body being about one-eleventh of the total length; the length of the head is contained seven times and a quarter in the same; the diameter of the eye is contained four times and a half in the length of the head; the caudal fin is emarginate; of eighteen or nineteen long rays; the ventrals are placed at an equal distance from the end of the mandible and the base of the anal. Six large hooked teeth on the front part of the tongue, and others on each side backwards. Colour the same as in *G. attenuatus*.

Lower Yarra. Length seven or eight inches.

854. GALAXIAS DELICATULUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 178.

D. 10. A. 19. C. 16.

Form elongate, the height of the body is one-seventh of the length to the middle of the caudal fin; the length of the head is six times and two-thirds in the same. The head is of a light brownish-red; the body of a light yellow-green above the lateral line, and is covered with faint, irregular transversal spots, formed of very fine blue points. The lateral line is little marked on its anterior portion, but very distinct, and of a yellowish colour behind; below this line the colour is a fine opal white; the eye is silvery. The dorsal fin is of the colour of the back, but its terminal portion is lighter; the caudal is of a yellowish-green; the pectorals, ventrals, and anal of a transparent white; the caudal is feebly bilobed.

Yarra River. Length four inches.

855. GALAXIAS AMÆNUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 178.

D. 12. A. 14.

The height of the body is five times and two-thirds in the length to the middle of the caudal; the length of the head four times and one-third. Of a light green colour; a brown spot between the eyes, extending a little behind them; the back covered with very minute black points, forming very indistinct, transverse, oblique lines, better marked on the posterior part. A considerable number of points, rather larger than the others, are disposed on the body, and form a double but rather irregular, longitudinal line on the middle of the back. The lower side of the body is covered with the same punctuation and bands as the back, but the belly is of a rather dark blue-silvery colour; the eye is of a dark green.

Yarra River. Length three to four inches.

856. GALAXIAS VERSICOLOR, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 176.

D. 9. A. 12. P. 13. C. 16.

Body oval; head attenuated and rather pointed. The height of the body is four times and two-thirds in the total length, the length of the head five times and eight-tenths; diameter of eye four times and one-third in the length of the head. Lower jaw a little longer than the upper; the cleft of the mouth small; the maxillary just reaching to below the anterior margin of the eye. The fins are rather large, the dorsal and anal opposite one another; the caudal is emarginate; the length of the pectoral is equal to the distance from the posterior margin to the end of the operculum; the ventrals are midway between the pectorals and the anal. The teeth are small on the upper jaw, but much larger, straight, pointed, and rather distant from one another, on the lower jaw; those of the tongue are large, straight, and pointed. The colour of the body is a fine green; the lower portions of the head and body are, the first grey, the other orange-yellow; the whole covered with very minute blue points. The fins are grey, with the rays white; the ventrals are white; eye golden.

Marsh near St. Kilda. Length five and a-half inches.

857. GALAXIAS ORNATUS, Casteln.

Proc. Zool. Soc, Victoria, Vol. II., p. 153.

D. 10. A. 11. P. 12. V. 7.

Height of body one-seventh of the total length, and equal to the length of the head. Lower jaw rather longer than the upper; diameter of eye one-fourth of the length of the head, and less than the extent of the snout. The dorsal is situated at double the distance from the snout that it is from the base of the caudal; caudal fin strongly emarginate; anal placed a little behind the dorsal; the ventrals equidistant from the base of the pectorals and anal; the pectorals are of the length of the distance between the posterior edge of the eye and the extremity of operculum. Colour above light green, beneath golden yellow; on the back are numerous transverse bands, rather narrow, but well defined of an obscure green. These bands are not agglomerations of fine points, as in many species; eyes yellow; fins light yellow.

Cardinia Creek, Victoria. Length four and a-half inches.

FAMILY VII. SCOMBRESOCIDÆ.

Body covered with scales; a series of keeled scales along each side of the belly. Margin of the upper jaw formed by the intermaxillaries mesially, and by the maxillaries laterally. Lower pharyngeals united into a single bone. Dorsal fin opposite the anal, belonging to the caudal portion of the vertebral column. Adipose fin none. Air-bladder generally present, simple, sometimes cellular, without pneumatic duct. Pseudobranchiæ hidden, glandular. Stomach not distinct from the intestine, which is quite straight, without appendages.

Genus BELONE, Cuv.

Both jaws prolonged into a long, slender beak, the upper part being formed by the intermaxillaries, which are united by a longitudinal suture. Both jaws with a band of asperities, and with a series of longer, conical, pointed, widely set teeth. Body elongate, slender, covered with small scales. All the dorsal and anal rays connected by a membrane. Gill-openings very wide. Intestinal tract simple without appendages. Air-bladder large.

Seas of temperate and tropical regions, entering rivers.

858. BELONE DEPRESSA, Poey.

Gunth., Cat. Fishes VI., p. 235.

D. 13-14. A. 18-19.

The free portion of the tail is strongly depressed, and dilated into a broad sharp edge on each side. Body rather depressed, subpentagonal. The length of the head is rather less than one-third of the total (without caudal); its upper surface flat, striated, without distinct median groove; superciliary region faintly striated; base of the intermaxillaries much depressed. Maxillary entirely hidden by the præorbital, which is scaly. Teeth very small; vomerine teeth none. The diameter of the eye is somewhat more than the width of the interorbital space, and one-half of the length of the post-orbital portion of the head. Depth of the body considerably less than the length of the pectoral fin, which is more than the distance of the opercular margin from the orbit. Ventral fin nearly midway between the eye and the caudal fin. The middle and hinder dorsal and anal rays subequal in length, short, the last terminating at a great distance from the root of the caudal. The origin of the anal is in advance of that of the dorsal. Caudal fin forked. Scales not very small, adherent. Green above, silvery below.

North-west Australia (Haslar Collection).

859. Belone melanotus, Bleek.

Atl. Ichth. Scombr., p. 47, tab. 10, fig. 2.—Gunth., Cat. Fishes VI., p. 238.

D. 24-26. A. 22-24.

The free portion of the tail is subtetrahedral, scarcely higher than broad, with a slight narrow longitudinal keel along the side. The length of the head is contained thrice and a sixth in the total length (without caudal); its upper surface flat, striated without conspicuous median groove; superciliary region striated; base of the intermaxillaries broad, slightly compressed; maxillary entirely hidden by the præorbital. Teeth of moderate strength; vomerine teeth none. The diameter of the eye is a little less than the width of the interorbital space, and one-half of the length of the postorbital portion of the head. Body slightly compressed, its depth being less than the length of the pectoral fin, which nearly equals the distance of the opercular margin from the orbit. Tongue covered with tubercular asperities. Ventral fin midway between the front margin of the eye and the root of the caudal.

The middle and hinder dorsal and anal rays are very slender and somewhat prolonged, the last extending nearly or quite to the root of the caudal. Caudal fin deeply forked. Scales very thin and minute, deciduous.

Cape York (Chevert Exp.). Port Darwin.

860. **Belone annulata**, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 240.—Bleek., Atl. Ichth. Scombr., p. 48, pl. 12, fig. 3.

D. 23-24. A. 21-22.

The free portion of the tail is tetrahedral, higher than broad, with a slight narrow longitudinal keel along the side. The length of the head is contained twice and a-third in the total length (without caudal), its upper surface with a broad and very shallow median groove; superciliary region striated; base of the intermaxillaries depressed; maxillary nearly entirely hidden by the præorbital. Teeth strong; vomerine teeth none. The diameter of the eye is two-thirds of the width of the interorbital space, and two-fifths of the length of the postorbital portion of the head. Body slightly compressed, its depth being much less than the length of the pectoral fin, which is more than the distance of the opercular margin from the orbit. Tongue covered with tubercular asperities. Ventral fin midway between the front margin of the eye and the root of the caudal fin. The middle and hinder rays of the dorsal fin are very slender and somewhat prolonged, the last extending nearly or quite to the root of the caudal. Caudal fin forked. Scales very thin and minute, deciduous.

Percy Islands and Cape York (Chevert Exp.). Length over three feet.

861. **Belone ferox**, Gunth.

Gunth., Cat. Fishes VI., p. 242.

"*Long Tom*" of the Fishermen.

D. 21. A. 26.

The free portion of the tail broad and depressed. The length of the head is less than one-third of the total (without caudal); its upper surface with a broad median groove, tapering behind and widening in front; superciliary region striated; base of the intermaxillaries depressed; only the basal half of the maxillary is hidden by the præorbital. Jaws and teeth strong; vomerine teeth none; tongue smooth. The diameter of the eye is two-thirds of the width of the interorbital space, and two-sevenths of the length of the postorbital portion of the head, Body compressed, its depth being less than the length of the pectoral fin, which exceeds the distance of the opercular margin from the orbit. The middle and hinder dorsal and anal rays are subequal in length, short, the last terminating at a considerable distance from the root of the caudal. Caudal fin truncate. Scales thin and rather small; adherent.

Port Jackson.

862. Belone caudimaculata, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 245.—Bleek., Atl. Ichth. Scombr., tab. 10, fig. 3.

D. 13. A. 15-16.

The free portion of the tail is compressed, much deeper than broad. The length of the head is contained twice and a-third in the total length (without caudal); its upper surface flat, with a rather shallow median groove of moderate width; supercilary region with one or two striæ; base of the intermaxillaries depressed; maxillary only half hidden by the præorbital. Teeth rather small; vomerine teeth none. The diameter of the eye equals the width of the interorbital space, and is contained twice and three-fourths in the length of the postorbital portion of the head. Body broad, subcylindrical, its depth being considerably less than the length of the pectoral fin, which is more than the distance of the opercular margin from the orbit. Ventral fin midway between the eye and the caudal fin. The middle and hinder rays of the dorsal and anal fins are subequal in length, short, the last terminating at a considerable distance from the root of the caudal. Caudal fin rounded. Scales rather small, adherent. A small round, deep black spot at the root of the caudal fin.

Port Darwin.

863. BELONE KREFFTII, Gunth.

Gunth., Cat. Fishes VI., p. 250.

D. 17. A. 19. P. 13.

The free portion of the tail is strongly compressed, much deeper than broad. The length of the head is contained twice and two-fifths in the total (without caudal); a scaly groove of moderate width runs along the middle of its upper surface; superciliary region slightly striated; base of the intermaxillaries much depressed; maxillaries two-thirds hidden by the præorbital. Teeth rather feeble, widely set; tongue smooth. The diameter of the eye equals the width of the interorbital space, and is one-third of the length of the postorbital portion of the head. Body strongly compressed, its depth being not much less than the length of the pectoral fin, which is somewhat less than the distance of the opercular margin from the orbit. Ventral fin midway between the præoperculum and caudal fin. Origin of dorsal fin opposite to that of anal. The middle and hinder dorsal and anal rays, subequal in length, short, the last terminating at some distance from the root of the caudal. Caudal fin slightly emarginate. Scales thin and small. Upper parts blackish, sides and belly silvery white, the two colours separated by a narrow greenish streak.

Rivers of Northern Queensland. Length two feet.

864. Belone gavialoides, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 142.

D. 22. A. 23. P. 12.

The length of the head is three times and a-half in the total length (without caudal); its upper surface is flat and impressed with two large radiated impressions, an elongated space in front of the eyes covered with small scales; a longitudinal groove on the medial line of the snout. Teeth very fine and numerous, with a line of large, conical, distant ones on each of both jaws, getting smaller and closer behind; no vomerine teeth; tongue smooth. The diameter of the eye is half the width of the interorbital space. Body rather compressed; its height is less than the length of the pectorals. Caudal fin strongly emarginate, the lower lobe longer than the upper. Colour in spirits dark brown above, silvery beneath; the snout black; the fins yellow.

West Australia. Length from three to four feet.

865. Belone gracilis, *n. sp.*

D. 20. A. 22. C. 17.

The length of the head is one-fourth of the total length (without caudal); its upper surface is striated, with a broad moderately deep groove in the centre; the beak is striated above; the præorbital entirely covers the maxillary. The diameter of the eye is about equal to the width of the interorbital space, and one-third of the length of the postorbital portion of the head. The length of the pectoral fin is much greater than the height of the body, but much less than the distance between the opercular margin and the eye. The ventral fin is situated nearer to the eye than to the root of the caudal. The anal fin commences much in advance of the dorsal, but both terminate near and at an equal distance from the caudal; the hinder rays of both are short and well apart. The caudal is long and rather acutely rounded; the free poation of the tail is much flattened above, and roundly keeled at the sides. The colour is reddish above the median line of the body which is well marked by a bluish silvery streak, beneath it is silvery, the pectoral fin is distinctly tipped with black, and the other fins are the same to a less extent.

Port Jackson. Length eight inches.

Genus SCOMBRESOX, Lacep.

Both jaws prolonged into a long slender beak, the upper part being formed by the intermaxillaries; both jaws with a series of extremely minute teeth. Body elongate, compressed, slender, covered with small thin deciduous scales. A number of detached finlets behind the dorsal and anal fins. Gill-openings very wide. Intestinal tract simple, without pyloric appendages. Air-bladder large.

Atlantic and Pacific Oceans.

866. SCOMBRESOX FORSTERI, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 258.—Hutton, Fishes, N. Zeal., p. 53.

D. 10/v. A. 11/vii. P. 15. V. 6.

"Length equal to four and a half times that of the head, or ten times the height of the body; length of the head about one and two-fifths that of the snout; lower jaw longer; base of ventrals half way between the root of the caudal and the anterior margin of the eye; upper pectoral ray very broad. Above shining plumbous-blue, below silvery-white."—(Hutton).

Melbourne (Castelnau). Sydney (Macl. Mus.).

Genus HEMIRHAMPHUS, Cuv.

The lower jaw is prolonged into a long slender beak; the upper is short, the intermaxillaries forming a triangular more or less convex plate. Both jaws with a narrow band of minute teeth. Body elongate slender, covered with large or moderate scales. All the dorsal and anal rays connected by a membrane.

Gill-openings very wide. Intestinal tract simple, without pyloric appendages. Air-bladder large.

Tropical Seas, sometimes entering fresh waters.

867. HEMIRHAMPHUS INTERMEDIUS, Cant.

Gunth., Cat. Fishes VI., p. 260.—*H. melanochir*, Cuv. & Val.

"*The Gar Fish*" of the Sydney Market.

D. 15-17. A. 18-20. P. 11.

Scales of moderate size, very deciduous. The length of the entire head is contained twice and three-fourths or twice and four-fifths, in the total (without caudal), the length of the lower jaw beyond the extremity of the upper, five times and a half. The triangular part of the upper jaw, formed by the intermaxillaries, is longer than broad. The diameter of the eye equals the width of the interorbital space, and is contained once and a half or once and two-thirds in the length of the postorbital part of the head. Præorbital as long as high. The root of the ventral fin is midway between the base of the caudal and that of the pectoral. Dorsal and anal fins scaleless, the origins of both nearly opposite. Caudal fin emarginate, the central rays much longer than the eye. Back dark greenish; sides with a well defined silvery band. Pectorals blackish.

Port Jackson, Melbourne, Brisbane, and West Australia.

868. HEMIRHAMPHUS REGULARIS, Gunth.

Gunth., Cat. Fishes VI., p. 261.

"*River Gar Fish*" of Sydney Fishermen.

D. 15. A. 17. L. lat. 58.

The length of the entire head is a little more than one-third of the total (without caudal), the length of the lower jaw beyond the extremity of the upper, one-half the length of the head. The triangular part of the upper jaw, formed by the intermaxillaries is much broader than long. The diameter of the eye is rather less than the width of the interorbital space, and two-thirds of the length of the postorbital part of the head. Vertex and interorbital space convex. The root of the ventral fin is nearly midway between the front margin of the eye and the base of the caudal fin. Dorsal and anal rays scaleless, the former a little longer than the latter; they commence opposite to each other. Caudal fin moderately forked, with the lobes nearly equal the central rays being much longer than the eye. Sides with a well defined silvery band as broad as a scale.

Port Jackson.

869. HEMIRHAMPHUS ARGENTEUS, Beun.

Hemirhamphus breviceps, Casteln., Proc. Linn. Soc. Vol. II., p. 240.

Brisbane. Rare in Sydney.

870. HEMIRHAMPHUS MARGINATUS, Forsk.

Gunth., Cat. Fishes VI., p. 270.—Bleek., Atl. Ichth. Scombr., tab. 8, fig. 4.

D. 14. A. 11-12. L. lat. 52.

The length of the entire head is contained twice and three-fifths, or twice and a half in the total (without caudal), the length of the lower jaw beyond the extremity of the upper, four times and one-third. The triangular part of the upper jaw, formed by the intermaxillaries, is as broad as long. The diameter of the eye equals the width of the interorbital space, and is contained once and three-fourths in the length of the postorbital part of the head. The root of the ventral fin is nearer to the caudal than to the axil of the pectoral. Dorsal and anal fins scaleless, the former much longer than the latter. Caudal fin deeply forked, the central rays being shorter than the eye. Back dark greenish; sides with a rather indistinct silvery band.

Palm Islands (Chevert Exp.)

871. HEMIRHAMPHUS COMMERSONII, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 271.—Bleek., Atl. Ichth. Scombr., tab. 6, fig. 3.

D. 13-14. A. 12. L. lat. 54. Vert. 38/16.

The length of the entire head is contained twice and two-thirds in the total (without caudal), the length of the lower jaw beyond the extremity of the upper, four times and one-third. The triangular part of the upper jaw formed by the intermaxillaries, is much broader than long. The diameter of the eye is less than the width of the interorbital space, and two-thirds of the length of the postorbital part of the head. The root of the ventral fin is equally distant from the base of the caudal and the extremity of the pectoral fins. Dorsal and anal fins scaly anteriorly—the former much longer than the latter. Caudal fin deeply forked, the central rays being equal in length to the diameter of the eye. Back dark greenish; sides with a silvery band and four rounded blackish blotches.

From Port Jackson to Cape York.

872. HEMIRHAMPHUS QUOYI, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 267.—Bleek., Atl. Ichth. Scombr., tab. 4, fig. 3.

D. 16. A. 14. P. 12. L. lat. 50-55.

Body tetrahedral, as broad as deep. The length of the head is contained from three times and a half to three times and two-thirds in the total length, that of the snout five times and a half or six times, and that of the prominent part of the lower jaw eight or eleven times. Upper jaw broader than long. The diameter of the eye is contained once and one-third in the length of the postorbital part of the head, and is equal to the width of the interorbital space. The dorsal fin commences before the anal; the ventrals are inserted in the fourth sixth of the total length, with the inner ray shortest; caudal fin deeply forked, the lower lobe longest. Sides with a silvery band.

South Coast New Guinea (Chevert Exp.)

873. HEMIRHAMPHUS AMBLYURUS, Bleek.

Atl. Ichth, Scombr., tab. 4, fig. 1.—Gunth., Cat. .Fishes VI., p. 273.

D. 13. A. 10. P. 9. L. lat. 46.

Head and body strongly compressed. The length of the head is contained twice and a fifth in the total (without caudal), that of the snout twice and three-fourths, and that of the prominent part of the lower jaw thrice; upper jaw twice as long as broad, one-fourth of the length of the prominent part of the lower. The diameter of the eye is less than the width of the interorbital space, and less than one-half the length of the postorbital part of the head; vertex flat. The ventral fins are twice as remote from the angle of the præoperculum as from the root of the caudal fin. Caudal fin rounded; anal rays slightly dilated. Sides with a very indistinct silvery band.

Port Darwin. Length five and a-half inches.

Genus ARRHAMPHUS, Gunth.

Differs only from *Hemirhamphus* in not having the lower jaw produced into a beak.

Australian Coasts.

874. ARRHAMPHUS SCLEROLEPIS, Gunth.

Gunth., Cat. Fishes VI., p. 277.

D. 13. A. 15. L. lat. 43.

The body is compressed, its greatest depth being contained six times and a half in the total length (without caudal); the length of the head is a little less than one-fourth of the same. The triangular part of the upper jaw, formed by the intermaxil-

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laries, is a little broader than long; the lower projects conspicuously before the upper. The diameter of the eye is considerably less than the width of the interorbital space, and two-thirds of the length of the postorbital part of the head. The whole of the upper surface of the head, except the intermaxillaries, is scaly. The insertion of the ventral fin is nearer to the extremity of the snout than to the base of the caudal. Pectoral fin two-thirds as long as the head; the dorsal commences opposite the anal, both fins scaly at the base. Caudal fin forked, its central rays much longer than the eye. Seven longitudinal series of scales between the origins of the dorsal and anal fins; the one above the lowest pierced by pores; the others with a slight keel. Sides with a well defined silvery streak, half as broad as a scale.

Port Darwin. Brisbane.

Genus Exocœtus, Artedi.

Jaws short, intermaxillaries and maxillaries separate. Teeth minute, rudimental, and apparently sometimes absent. Body moderately oblong, covered with rather large scales. Pectoral fins very long, formed for flying. All the dorsal and anal rays connected by a membrane. Gill-openings very wide. Intestinal tract simple without pyloric appendages. Air-bladder large.

Tropical and temperate seas.

875. Exocœtus microptertus, Cuv. and Val.

Gunth., Cat. Fishes VI., p. 279.—Bleek., Atl. Ichth. Scombr., tab 3, fig. 1.

D. 15. A. 14-16.

Two short barbels at the symphysis of the lower jaw. Body rounded, its height being rather more than one-sixth of the length (without caudal); the length of the head two-ninths of the same. Lower jaw prominent, but not produced. The length of the pectoral fin is only two-sevenths of the total length (without caudal); insertion of the ventral midway between the root of the caudal and the axil of the pectoral.

Australian Seas (Gunther).

876. Exocœtus evolans, L.

Gunth., Cat. Fishes VI., p. 282.—White, Voy. N.S. Wales, pl. 52, fig. 2.

D. 13-14. A. 13-14. L. lat. 42. Vert. 25/19.

The height of the body is two-elevenths of the length (without caudal); the length of the head one-fourth. The depth of the head is less than the distance between the extremity of the snout and the hind margin of the præoperculum, and is contained once and three-fourths in its length. Snout obtuse and short, three-fourths the length of the diameter of the eye, which is nearly one-fourth of the length of the head, and somewhat less than the width of the interorbital space, which is quite flat. The pectoral fin extends to the root of the caudal. Ventral fin midway between the end of the snout and of the dorsal fin, terminating at a great distance from the vent. The dorsal fin commences a little in advance of the anal, its anterior rays not being half as long as the head. There are twenty scales between the occiput and the origin of the dorsal, and six longitudinal series of scales between the origin of the dorsal and the lateral line. Pectoral uniform blackish, with the lower border whitish. Ventrals white.

North Coast of Australia.

877. Exocœtus speculiger, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 287.—Bleek., Atl. Ichth. Scombr., tab. 5., fig. 4.

D. 11-12. A. 12-13. L lat. 50. Vert. 28/17.

The height of the body is one-sixth or nearly one-seventh of the length (without caudal); the length of the head two-ninths. The depth of the head equals the distance between the extremity of the snout and the hind margin of the orbit. Snout rather produced, scarcely equal in length to the diameter of the eye, which is one-third of the length of the head, and less than the width of the interorbital space, which is slightly concave. The pectoral fin extends beyond the dorsal and anal, nearly to the rudimentary rays of the caudal. Ventral fins nearly midway between the eye and the root of the caudal, extending to the end of the base of the anal. The dorsal commences a little behind the origin of the anal, its anterior rays are half as long as the head. There are twenty-nine scales between the occiput and the origin of the dorsal fin, and six or seven longitudinal series of scales between the origin of the dorsal and the lateral line. Pectoral with an oblique white band across its lower half and with a broad whitish edge. Ventrals white, the middle rays greyish.

Australia (Gunther).

878. EXOCŒTUS ROBUSTUS, Gunth.

Gunth., Cat. Fishes VI., p. 289.

D. 14. A. 10. L. lat. 49.

The height of the body is two-elevenths of the length (without caudal); the length of the head two-ninths. The depth of the head equals the distance between the extremity of the snout and the hind margin of the orbit. Snout a little produced, scarcely equal in length to the diameter of the eye, which is two-sevenths of the length of the head, and less than the width of the interorbital space, which is quite flat. The pectoral fin extends beyond the dorsal and anal, nearly to the rudimentary rays of the caudal. Ventral fins nearly midway between the nostril and the root of the caudal, extending beyond the middle of the base of the anal. The dorsal fin commences far in advance of the anal; its anterior rays are not quite half as long as the head. There are twenty-eight scales between the occiput and the origin of the dorsal fin, and eight longitudinal series of scales between the origin of the dorsal, and the lateral line. Pectoral fin with a broadish oblique whitish band across its anterior half, and with a whitish margin. Ventrals white, the middle rays greyish.

Australia (Gunther). Length sixteen inches.

879. Exocœtus nigripinnis, Cuv. & Val.

Gunth., Cat. Fishes VI., p. 298.—Bleek., Atl. Ichth. Scombr., tab 5, fig. 1.

D. 10-11. A. 10-12. L. lat. 48-50.

The height of the body is one-sixth or a little less of the length (without caudal), the length of the head two-ninths, The depth of the head equals the distance between the extremity of the snout and the hind margin of the præoperculum. Snout obtuse and very short, scarcely more than half the length of the diameter of the eye, which is two-fifths of the length of the head, and is less than the width of the interorbital space, which is concave. The pectoral fin extends to the end of the dorsal, or root of the caudal. Ventral fin midway between the eye and the root of the caudal, extending nearly to the end of the tail. The dorsal commences above the origin of the anal, its anterior rays being more than half as long as the head. There are twenty-nine scales between the occiput and the origin of the dorsal fin, and six longitudinal series of scales between the origin of the dorsal and the lateral line. Pectoral and ventral fins black.

West. Australia. Warrior Reef (Chevert Exp.)

880. Exocœtus atrodorsalis, Gunth.

Gunth., Ann. and Mag. Nat. Hist. 1867, Vol. XX., p. 67.

D. 8-9. A. 10. L. lat. 35.

The pectoral fin extends to the end of the dorsal. The ventral fin is scarcely nearer to the root of the caudal than to the end of the snout, extending to the origin of the anal. Dorsal fin elevated, its longest anterior rays being as long as the head; it commences in front of the anal. Upper pectoral rays blackish, lower whitish; dorsal fin entirely black.

Cape York. Length five inches.

FAMILY VIII. CYPRINIDÆ.

Body generally covered with scales, head naked. Margin of the upper jaw formed by the intermaxillaries. Belly rounded, or if trenchant, without ossicles. No adipose fin. Stomach without blind sac. Pyloric appendages none. Mouth toothless; lower pharyngeal bones well developed, falciform, subparallel to the branchial arches, provided with teeth, which are arranged in one, two or three series. Air-bladder large, divided into an anterior and posterior portion by a constriction, or into a right and left portion, enclosed in an osseous capsule. Ovarian sacs closed.

Fresh waters of the World.

Genus NEOCARASSIUS, Casteln.

Scales large. Belly compressed into a sharp ridge behind the ventrals, the scales of one side not overlapping on the other. Dorsal fin short, with a strong serrated ray, behind the ventral; anal fin short. Cleft of the mouth lateral. Barbels none. Allied to *Rohteichthys*.

Australia.

881. NEOCARASSIUS VENTRICOSUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 237.

D. 21. A. 8. V. 8. P. 19. L. lat. 30. L. transv. 7/8.

Body very high and thick, with the belly very round and prominent; the height is twice and a third in the total length; the length of the head four times and a half; the diameter of the orbit four-tenths of the length of the head. Large scales on the infraorbital bone; lateral line straight. Caudal fin emarginate. Colour a golden green or red, with the under parts silvery-white.

Salt-water river, Melbourne. Two specimens, nine and ten inches in length.

Genus LEUCISCUS, Cuv.

Body covered with imbricate scales; lateral line generally complete, running in, or only a little below, the median line of the tail. Dorsal fin short without stiff ray, commencing opposite, rarely behind, the ventrals. Anal fin rather short or moderately developed, generally with from nine to eleven rays, rarely with eight, and still more rarely with fourteen rays. Mouth without structural peculiarities; lower jaw not trenchant; barbels none. Pseudobranchiæ. Pharyngeal teeth conical or compressed, in a single or double series. Intestinal tract short, with only a few convolutions.

Rivers of the Northern Hemisphere. Australia?

882. LEUCISCUS ? AUSTRALIS, Casteln.

Proc. Linn. Soc. N. S. W. Vol. III., p. 51.

Norman River.

FAMILY IX. GONORHYNCHIDÆ.

Head and body entirely covered with spiny scales; mouth with barbels. Margin of the upper jaw formed by the intermaxillary, which although short, is continued downwards as a thick lip, situated in front of the maxillary. Adipose fin none; the dorsal is opposite to the ventrals and short like the anal. Stomach simple, without blind sac; pyloric appendages in small number. Pseudobranchiæ; air-bladder absent. Gill-openings narrow.

Genus GONORHYNCHUS, Gronov.

Body elongate, subcylindrical; head pointed; snout conically projecting beyond the mouth, which is inferior and semicircular.

A single barbel behind the end of the snout; lips thick, fringed. Eye large, covered by the transparent skin. Teeth none in the jaws or on the palate; two patches of obtuse teeth behind the palate, on the pterygoid bones, opposed to a single larger patch on the hyoid. A lobe of the mucous membrane is suspended from the roof of the mouth, in front of the teeth. Dorsal fin opposite to the ventrals, these fins being approximate to the vent; caudal fin subtruncate. Gill-membranes grown to the isthmus. A fringed gill-like organ behind the fourth branchial arch, one half being attached to this arch, the other half to the humeral arch. Branchiostegals four.

South Africa. Australia. New Zealand, &c.

883. GONORHYNCHUS GREYI, Richards.

Gunth., Cat. Fishes VII., p. 373.

Gonorhynchus brevis, Kner., Voy. Novar., p. 342, pl. 16, fig. 1.

B. 4. D. 11-13. A. 9. V. 9. Cæc. pylor. 6-9.

Scales very small. The height of the body is about one-half of the length of the head, which is from two-ninths to one-sixth of the total length (without caudal). Terminal portion of the fins black, edged with white.

West Australia, South Australia, and Victoria.

FAMILY X. OSTEOGLOSSIDÆ.

Body covered with large hard scales, composed of pieces like Mosaic; head scaleless, its integuments nearly entirely replaced by bone; lateral line composed of wide openings of the mucus-duct. Margin of the upper jaw formed by the intermaxillaries mesially, and by the maxillaries laterally. The dorsal fin belongs to the caudal portion of the vertebral column, and is opposite and very similar to the anal fin; both approximate to the rounded caudal, with which they are abnormally confluent. Gill-openings wide; pseudobranchiæ none; air-bladder simple or cellular. Stomach without cæcal sac; pyloric appendages two.

Genus Osteoglossum Vandelli.

Body more or less elongate, compressed, with the abdomen compressed into a trenchant edge; cleft of the mouth very wide, oblique, with the lower jaw prominent. A pair of barbels at the lower jaw. Maxillary very long, styliform, scarcely protractile. Jaws with a series of small teeth; bands of rasp-like teeth on the vomer, palatine and pterygoid bones, on the tongue and hyoid. Pectoral fins elongate. Gill-membranes nearly entirely separate; branchiostegals rather numerous; air-bladder simple. Stomach without blind sac; two pyloric appendages.

Rivers of tropical America, Australia, and East Indian Archipelago.

884. Osteoglossum Leichardti, Gunth.

Scleropages Leichardti, Gunth., Ann. and Mag. Nat. Hist., 1864.
Vol. XIV., p. 196, pl. 7.—Cat. Fishes VII., p. 378.
"*Burramundi*" of the Aborigines of the Dawson River.
D. 20. A. 31. V. 5. L. lat. 35. L. transv. 3/4.

The length of the head is contained thrice and three-fourths in the total length (without caudal), and rather more than the distance between the pectoral and ventral fins. A distinct space between anal and caudal. Barbels very small.

Queensland Rivers. Length, from two to three feet.

Family XI. CLUPEIDÆ.

Body covered with scales; head naked; barbels none. Abdomen frequently compressed into a serrated edge. Margin of the upper jaw formed by the intermaxillaries mesially, and by the maxillaries laterally; maxillaries composed of three, sometimes moveable, pieces. Opercular apparatus complete. Adipose fin none. Dorsal not elongate; anal sometimes very long. Stomach with a blind sac; pyloric appendages numerous. Gill-apparatus much developed, the gill-openings being generally very wide. Pseudobranchiæ large except in *Megalops*. Air-bladder more or less simple.

Genus ENGRAULIS, Cuv. & Val.

Body oblong, compressed. Scales large or of moderate size. Snout more or less conical, projecting beyond the lower jaw. Generally small teeth in the jaws, on the vomer, palatine and pterygoid bones. Intermaxillaries very small, hidden; maxillary long, attached to the cheek by a scarcely distensible membrane. Anal fin of moderate or great length. Union of the gill-membranes very short, leaving the isthmus uncovered, the gill-openings being extremely wide. Branchiostegals short, from nine to fourteen in number.

Temperate and tropical seas, entering rivers.

885. ENGRAULIS ANTARCTICUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 365.

Victoria and Tasmania.

886. ENGRAULIS NASUTUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 367.

Norman River.

Genus CHATOËSSUS, Cuv. & Val.

Body compressed, abdomen serrated. Scales of moderate size. Snout obtuse, or obtusely conical, more or less projecting beyond the cleft of the mouth, which is narrow, and more or less transverse. The maxillary is joined to the ethnoid bone, its upper portion being behind the intermaxillary. Teeth none. Anal fin rather long; dorsal opposite to the ventrals or to the space between the ventrals and anal. Gill-membranes entirely separate; branchial arches forming two angles, one pointing forwards, the other backwards; the fourth branchial arch with an accessory organ; branchiostegals of moderate length, five or six in number.

Coasts and freshwaters of America, Australia and East Indies.

887. **CHATOËSSUS EREBI**, Richards.

Proc. Linn. Soc. N. S. Wales, Vol. IV., p. 368.

North and West Coasts.

888. **CHATOËSSUS RICHARDSONI**, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 369.

Rivers of the Murray system.

Genus BRISBANIA, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 241.

889. **BRISBANIA STAIGERI**, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 241-3, pl. 3.

Brisbane River.

Genus CLUPEA, Cuv.

Body compressed, with the abdominal serrature extending forwards into the thoracic region. Scales of moderate or large, rarely of small size. Upper jaw not projecting beyond the lower. Cleft of the mouth of moderate width; teeth, if present, rudimentary and deciduous. Anal fin of moderate extent, with less than thirty rays; dorsal fin opposite to the ventrals. Caudal fin forked.

All seas; many species entering fresh waters.

890. **CLUPEA SAGAX**, Jenyns.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 371.

Tasmania, Victoria, New South Wales.

891. CLUPEA SUNDAICA, Bleek.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 373.

Port Jackson. Hawkesbury River.

892. CLUPEA HYPSELOSOMA, Bleek.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 375.

Port Jackson.

893. CLUPEA MOLUCCENSIS, Bleek.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 376.

Port Jackson.

894. CLUPEA TEMBANG, Bleek.

Proc. Linn. Soc., N.S. Wales, Vol. IV., p. 377.

Torres Straits (Chevert Exp.)

895. CLUPEA NOVÆ-HOLLANDIÆ, Cuv. & Val.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 378.

Nepean River.

896. CLUPEA VITTATA, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 379.

Rivers of Victoria.

897. CLUPEA RICHMONDIA, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 380.

Richmond River.

898. CLUPEA SCLEGELII, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 380.

899. CLUPEA SPRATTUS, L.

Gunth., Cat. Fishes VII., p. 419.—Proc. Zool. Soc., 1871, p. 672.

The "*Sprat*" or "*Garvie*" of England.

B. 6-7. D. 15-18. A. 17-20. V. 7. L. lat. 47-48. Vert. 47-49.

Scales deciduous, smooth. The height of the body is about equal to the length of the head. Lower jaw prominent, the maxillary extending to somewhat beyond the vertical from the front margin of the eye. An elongate ovate patch of very small teeth on the tongue, none on the vomer. Gill-rakers very fine, closely set, rather shorter than the eye. Ventral even with the origin of the dorsal. There are eleven or twelve abdominal scutes behind the root of the ventrals. Operculum without radiating striæ.

Tasmania (Gunther).

Genus SPRATELLOIDES, Bleek.

Body slightly compressed or subcylindrical, elongate. Abdomen obtuse, without keel or serrature. Scales of moderate size, deciduous; lateral line none. Snout compressed, formed as in *Clupea*. Teeth none, or minute and deciduous. Anal fin short; dorsal opposite to the ventrals. Gill-membranes separate, with about six short flat branchiostegals. Pseudobranchiæ well developed. Pyloric appendages in moderate number; stomach with a long blind sac. Ovaries closed, with oviducts.

Indian and Australian seas. West Indies.

900. SPRATELLOIDES DELICATULUS, Beun.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 381.

Darnley Island (Chevert Exp.)

Genus ETRUMEUS, Bleek.

Body elongate, subcylindrical; abdomen not compressed or serrated. Scales of moderate size, very deciduous; lateral line none. Snout pointed; jaws and mouth formed as in *Clupea*, but with the supplementary bones of the maxillary very narrow. Jaws with small but fixed non-deciduous teeth; patches of villiform teeth on the vomer, the palatine and pterygoid bones, anal on the tongue. *Dorsal fin entirely in advance of the ventrals;* anal fin short. Gill-membranes entirely separate, with numerous fine branchiostegals; pseudobranchiæ well developed. Pyloric appendages numerous.

Japan; North Atlantic; Australia.

901. ETRUMEUS JACKSONIENSIS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 36, pl. 4, fig.1.

Port Jackson.

Genus ELOPS, L.

Body rather elongate, moderately compressed; abdomen flat. Scales small, adherent: lateral line distinct. A narrow osseous lamella, attached to the mandibulary symphysis, covers the part between the mandibles. Snout pointed, mouth wide, anterior; intermaxillary short, maxillary forming the lateral part of the mouth. Bands of villiform teeth in the jaws, on the vomer, palatine and pterygoid bones, on the tongue and on the base of the skull. Dorsal fin opposite the ventrals; anal rather shorter than dorsal. Gill-membranes entirely separate, with very numerous branchiostegals. Pseudobranchiæ well developed. Pyloric appendages numerous.

Tropical and subtropical seas.

902. ELOPS SAURUS, L.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 382.

Port Jackson. North Coast.

Genus MEGALOPS, Lacep.

Body oblong, compressed; abdomen flat. Scales large, adherent; lateral line distinct. A narrow osseous lamella attached to the mandibulary symphysis between the mandibles. Snout obtusely conical; mouth anterior, lower jaw prominent; intermaxillary short, the maxillary forming the lateral part of the mouth. Bands of villiform teeth in the jaws, on the vomer, palatine and pterygoid bones, on the tongue and on the base of the skull. Dorsal fin opposite to, or immediately behind, the ventrals; anal rather longer than the dorsal. Gill-membranes entirely separate; with numerous branchiostegals. Pseudobranchiæ none. Pyloric appendages numerous.

Tropical seas, entering rivers.

903. MEGALOPS CYPRINOIDES, Brouss.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 383.

Hawkesbury River.

Genus CHANOS, Lacep.

Body oblong, compressed; abdomen flat. Scales small, striated, adherent; lateral line distinct. Snout depressed; mouth small, anterior, transverse, the lower jaw with a small symphysial tubercle. Intermaxillary in juxtaposition to the upper anterior edge of the maxillary. Teeth none. Dorsal fin opposite to the ventrals; anal small, shorter than the dorsal; caudal deeply forked. Gill-membranes entirely united below, and free from the isthmus. Branchiostegals four, long. Pseudobranchiæ well developed. An accessory branchial organ in a cavity behind the gill-cavity proper. Air-bladder divided by a constriction into an anterior and posterior portion. Mucous membrane of the œsophagus raised into a spiral fold. Pyloric appendages numerous; intestine with many convolutions.

Indian and Pacific Oceans.

904. CHANOS SALMONEUS, Bl.

Proc. Linn. Soc. N.S. Wales, Vol. IV., p. 383.

Port Jackson (rare), North Coast.

FAMILY XII. CHIROCENTRIDÆ.

Body covered with thin deciduous scales; barbels none. Margin of the upper jaw formed by the intermaxillaries mesially and by the maxillaries laterally, both bones being firmly united by juxta-position. Opercular apparatus complete. Adipose fin none; the dorsal fin belongs to the caudal portion of the vertebral column. Stomach with a blind sac; intestine short, the mucous membrane forming a spiral fold; pyloric appendages none. Pseudobranchiæ none; air-bladder incompletely divided into cells; gill-opening wide.

Genus CHIROCENTRUS, Cuv.

Body elongate, compressed, with the abdomen trenchant; cleft of the mouth wide, oblique, with the lower jaw prominent. Lower jaw with a series of large canine teeth; intermaxillary with a pair of horizontal canines. Narrow bands of minute teeth on the palatine and pterygoid bones and on the tongue. Dorsal fin short, opposite to the anal, which is long. A long pointed osseous appendage at the base of the pectoral; ventral fins very small. Gill-membranes united for a short distance, with eight branchiostegals.

From Africa to China.

905. CHIROCENTRUS DORAB, Forsk.

Gunth., Cat. Fishes VII., p. 475.—Bleek., Atl. Ichth. Clup., tab. 11, fig. 3.

B. 8. D. 16-17. A. 33-34. V. 7. Vert. 29/46.

The height of the body is less than the length of the head, which is about two-elevenths of the total length exclusive of the caudal fin. Coloration uniform.

Port Jackson. Cape York. Length three feet.

FAMILY XIII. ALEPOCEPHALIDÆ.

Body covered with thin cycloid scales; head naked; barbels none. Margin of the upper jaw formed by the intermaxillaries and maxillaries, the former being placed along the upper anterior edge of the latter. Opercular apparatus complete. Adipose fin none; the dorsal fin belongs to the caudal portion of the vertebral column. Stomach curved, without blind sac; pyloric appendages in moderate number. Pseudobranchiæ; air-bladder absent. Gill-openings very wide.

Genus ALEPOCEPHALUS, Risso.

Body oblong, compressed; cleft of the mouth of moderate width with the jaws nearly even in front; a series of small teeth on the intermaxillaries, mandibles and palatine bones. Dorsal and anal fins subequal in length, opposite to each other; caudal emarginate. Bones thin. Gill-membranes entirely separate, with six branchiostegals.

Deep sea Fishes.

906. ALEPOCEPHALUS NIGER, Gunth.

Ann. and Mag. Nat. Hist., 1878, Vol. II., p. 248.

D. 21. A. 27.

Scales small. The length of the head is one-third of the total length without the caudal fin. Snout projecting beyond the mouth. Black.

North of Australia, 1,400 fathoms (Challenger).

FAMILY XIV. SYMBRANCHIDÆ.

Body elongate, naked or covered with minute scales; barbels none. Margin of the upper jaw formed by the intermaxillaries only, the well developed maxillaries lying behind and parallel to them. Paired fins none. Vertical fins rudimentary, reduced to more or less distinct cutaneous folds. Vent situated at a great distance behind the head. Ribs present. Gill-openings confluent into one slit situated on the ventral surface. Air-bladder none. Stomach without cæcal sac, or pyloric appendages. Ovaries with oviducts.

Genus SYMBRANCHUS, Bl.

Body naked. Four branchial arches with well developed gills. No accessory breathing sac. Gill-membrane free from the isthmus. Palatine teeth in a band.

Warm Seas.

907. SYMBRANCHUS GUTTURALIS, Richards.

Voy. Erebus and Terror, Fishes, p. 49, pl. 30, figs. 14-17.

Body cylindrical; tail compressed. The colour is of an uniform liver brown, slightly paler along the ventral line and darker towards the tip of the tail. The throat and cheeks with the snout are bluish-grey, mottled thickly with brown spots and lines. The eyes are small and situated near the snout.

Dampier's Archipelago. Port Darwin.

Dr. Gunther looks upon this species as identical with *Ophisternon bengalensis*, M'Clell., and *Symbranchus immaculatus*, Müller.

Genus CHILOBRANCHUS, Richards.

Body naked, compressed, subcylindrical in front, moderately elongate. Head small; snout very obtuse and short; mouth narrow, with the upper jaw slightly protractile; eye of moderate size. Teeth in the jaws in a single series; none on the palate. Gill-opening transverse, the gill-membrane not attached to the isthmus; hinder edge of the gill-opening with a raised lip. Four branchial arches, no slit behind the fourth; gills well developed; no accessory breathing-sac. Vent in the anterior half of the total length, with a minute papilla. Vertical fins reduced to a simple cutaneous fold, without rays. Intestinal tract straight—the stomachal dilatation being longer than the intestine proper, and provided with a short cæcal appendage near its upper end.

Australia.

908. Chilobranchus dorsalis, Richards.

Voy. Erebus and Terror, p. 50, pl. 30, figs. 1-5.—Gunth., Cat. Fishes VIII., p. 18.

The length of the head somewhat less than half the distance between the gill-opening and the vent. Colour blackish-brown, with a median dorsal line, and the dorsal and anal fins of a paler hue. Vert. 21/52.

N. W. Australia.

909. Chilobranchus rufus, *n. sp.*

The length of the head is about one-third of the distance between the gill-opening and vent. The colour is red, with six or seven large blue or dark purple spots along each side becoming fainter towards the tail.

Port Jackson. Tasmania. Length under three inches.

Family XV. MURÆNIDÆ.

Body elongate, cylindrical or band shaped, naked or with rudimentary scales. Vent situated at a great distance from the head. Ventral fin none. Vertical fins, if present, confluent, or separated by the projecting tip of the tail. Sides of the upper jaw formed by the tooth-bearing maxillaries, the fore part by the intermaxillary, which is more or less coalescent with the vomer and ethnoid. Humeral arch not attached to the skull. Stomach with a blind sac; no pyloric appendages. Organs of reproduction without efferent ducts.

Sub-Family I. MURÆNIDÆ PLATYSCHISTÆ.

The branchial openings in the pharynx are wide.

Genus ANGUILLA, Cuv.

Small scales are imbedded in the skin. Upper jaw not projecting beyond the lower. Teeth small, forming bands. Gill-openings narrow, at the base of the pectoral fins. The dorsal fin commences at a considerable distance from the occiput.

Seas and rivers of the whole World.

910. ANGUILLA REINHARDTII, Steind.

Gunth., Cat. Fishes VIII., p. 27.

The length of the head is contained once and one-third in the distance of the gill-opening from the origin of the dorsal fin, one-half of its distance from the vent, and conspicuously more than the distance between the commencement of the dorsal and anal fins. Snout long, depressed, spatulate; lips fleshy. The cleft of the mouth extends to the vertical from, or scarcely beyond, the hind margin of the eye, which is small. Vomerine teeth in a band, which is rather broad anteriorly, being broader in the middle than the maxillary band, and extending equally far backwards. The mandibulary band of teeth is longitudinally divided by a narrow groove. Tail not much longer than the body. Upper parts greenish, with numerous black spots which disappear with age.

Sydney. Hawkesbury. Cape York. Richmond River.

911. ANGUILLA AUSTRALIS, Richards.

Voy. Erebus and Terror, p. 112, pl. 45, figs. 1-5.—Gunth., Cat. Fishes VIII., p. 36.

The dorsal fin commences at a very short distance in advance of the anal. The length of the head is contained twice and a third or twice and two-thirds in the distance of the gill-opening from the vent. Angle of the mouth below the posterior part of the eye. Lips fleshy. Teeth equally small, forming broadish, flat bands, the mandibulary and vomerine bands being broader than the maxillary band. The vomerine band does not extend so far backwards as the maxillary band. Tail rather longer than the body.

Tasmania, Victorian and N.S. Wales coasts and rivers.

Genus CONGER, Cuv.

Scaleless. Cleft of the mouth wide, extending at least to below the middle of the eye. Maxillary and mandibulary teeth arranged in series, one of which contains teeth of equal size, and so closely set as to form a cutting edge; no canines; vomerine band short. Pectoral and vertical fins well developed; the dorsal commencing behind the root of the pectoral. Gill-opening large, approximate to the abdomen. The posterior nostril opposite to the upper or middle part of the orbit; the anterior in a tube. Eyes well developed.

Temperate and Tropical Seas.

912. CONGER MARGINATUS, Val.

Gunth., Cat. Fishes VIII., p. 38.—Bleek., Atl. Ichth. Mur., pl. 23, fig. 2.

The dorsal fin commences conspicuously in advance of the extremity of the pectoral. Posterior nostril slightly below the level of the antero-posterior angle of the orbit. Upper jaw scarcely longer than the lower. The vomerine teeth reach backwards to or somewhat beyond the tip of the tongue. Greyish or blackish; vertical fins with a black edge; pectorals frequently with a black spot.

Torres Straits.

913. CONGER VULGARIS, Cuv.

Gunth., Cat. Fishes VIII., p. 38.—Bleek., Atl. Ichth. Mur., pl. 5, fig. 2.

The dorsal fin begins opposite, or nearly opposite, to the extremity of the pectoral. Posterior nostril on a level with the antero-superior angle of the orbit. Jaws nearly even in front. The vomerine teeth reach backwards nearly to the tip of the tongue. Body and pectoral fin immaculate.

Tasmania. Endeavour River.

914. CONGER WILSONI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 193.

Gymnothorax Wilsoni, Bloch ?

The height of the body is about twenty times in the length; the distance of the muzzle to the gill-opening eight times in the same. Head elongate. Teeth long, straight and placed close together, forming a cluster in front; the anterior teeth are smaller than those behind; a sharp crenulated ridge inside the row of teeth. The dorsal fin commences behind the extremity of the pectoral and is composed of about three hundred and twenty rays; the anal commences a little before the middle of the entire length and has about two hundred and sixty rays, The pectorals are about one-fourth of the length of the head. Colour shining brownish-black, becoming greyish white on the belly. The lateral line is black and there are large, marbled, pinkish-white spots on the posterior part of the body.

Melbourne. Tasmania. Length four to five feet.

915. CONGER LABIATUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 396.

Port Jackson.

Genus CONGROMURÆNA, Kaup.

Scaleless, Bones of the front part of the head with large muciferous cavities, Cleft of the mouth narrow, not extending backwards beyond the middle of the eye. All the teeth small, fine, forming bands; those of the jaws not forming a cutting edge. Vomerine band narrow, long. Pectoral and vertical fins well developed, the dorsal beginning nearly above the gill-opening. The posterior nostril opposite to the middle of the eye; the anterior with a very short tube. Eyes large.

Tropical and subtropical seas.

916. CONGROMURÆNA HABENATA, Richards.

Gunth., Cat. Fishes VIII., p. 42.—Richards., Voy. Erebus and Terror, pl. 50, fig. 1-5.

Upper jaw much projecting beyond the lower. Lips moderately developed; the cleft of the mouth extends nearly to below the middle of the eye. Tail rather longer than the body. Dorsal fin beginning immediately behind the base of the pectoral. Vertical fins with a narrow black margin.

Melbourne (once seen). Bondi (one specimen cast on beach).

Genus MURÆNESOX, M'Clell.

Scaleless. Snout produced. Jaws with several series of small closely set teeth; anteriorly with canines; vomer with several long series of teeth, the middle of which is formed by large conical or compressed teeth. Gill-openings wide, approximate to the abdomen. Pectoral and vertical fins well developed, the dorsal beginning above the gill-opening. Two pairs of nostrils, the posterior opposite to the upper part or middle of the eye.

Warm Seas.

817. MURÆNESOX CINEREUS, Forsk.

Gunth., Cat. Fishes VIII., p. 46.

M. bagio, Peters.—Bleek., Atl. Ichth. Mur., pl. 26, fig. 2.

"*The Silver Eel*" of Sydney Fishermen.

Vomerine teeth compressed, with a basal lobe in front and behind; the teeth of the inner series of the mandible similar in form to, and much smaller than, those of the vomer, and but rarely with basal lobes; those of the outer series rudimentary, not bent outwards. Silvery.

Port Jackson.

Genus MYROPHIS, Lütken.

Nostrils on the margin of the upper lip, the anterior tubular. Pectoral fins well developed; vertical fins low, surrounding the tail; the dorsal commencing far behind the pectoral. Teeth bi- or tri-serial, uni-serial on the hinder part of the vomer.

Tropical Atlantic. Australia.

918. MYROPHIS CHRYSOGASTER, *n. sp.*

Length of the head about one-twelfth of the total length; length of tail twice that of the body, without the head. The dorsal fin appears to commence (it is so low as to be difficult of detection) about midway between the gill-opening and the vent. Snout rather long, rounded and rather depressed in front, the nasal tubes large. The teeth have a round molar appearance. The colour seems to have been reddish-brown, becoming yellowish on the belly. Length two feet.

Port Darwin.

919. MYROPHIS AUSTRALIS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 396.

Port Jackson.

Genus BLANCHARDIA, Casteln.

Body scaly and very elongate. Mouth broad; teeth in numerous series, pavement like, extending in a longitudinal line over the palate and posterior part of the mouth; nostrils in front of the eyes, not tubular. The dorsal fin commences a little behind the insertion of the pectorals and is continuous with the caudal and anal; pectorals rather large; vent a little nearer the snout than to the base of the caudal fin. Gill-openings broad, extending under the posterior and inferior edges of the opercle.

Queensland.

920. BLANCHARDIA MACULATA, Casteln.

Researches on the Fishes of Australia, p. 47.

The scales on the body are small and disposed in oblique transverse lines. The length of the head is eight times and one-third in the total length; the caudal fin is longer than the pectoral and equal to the height of the body. Colour (in spirits) light lilac, covered with minute dark brown spots; lower part of the head and body yellow and immaculate.

Queensland. Length five inches.

Genus MURÆNICHTHYS, Bleek.

Body long, cylindrical, vermiform. Nostrils on the margin of the upper lip. No pectoral fins. Dorsal fin low or rudimentary, commencing at a great distance behind the gill-opening. Gill-opening narrow. Eyes small.

East Indian Archipelago. Australia.

921. MURÆNICHTHYS AUSTRALIS, *n. sp.*

Body very slender, its depth being about one-sixtieth of its length, the length of the head is one-fifteenth. The dorsal fin is scarcely visible and commences exactly over the vent, the distance from the vent to the muzzle is one-fourth less than that from the vent to the extremity of the tail. Snout pointed, the upper jaw much exceeding the lower; teeth equal, regular and cardiform; the eye rather behind the middle of the cleft of the mouth. Colour reddish-yellow. Length ten inches.

Lane Cove, Port Jackson.

922. MURÆNICHTHYS BREVICEPS, Gunth.

Ann. and Mag. Nat. Hist., 1876, Vol. XVII., p. 401.

The origin of the dorsal fin is twice as distant from the vent as from the gill-opening. The length of the head is only one-third or two-sevenths of the distance of the gill-opening from the vent or one-eleventh of the total length. Snout very long and narrow, the cleft of the mouth extending to behind the eye. Teeth bi-serial.

Tasmania. Length twenty inches.

Genus OPHICHTHYS, Gunth.

The extremity of the tail free, not surrounded by the continuation of the dorsal and anal fins. Teeth on the vomer as well as in the jaws.

Warm Seas.

923. OPHICHTHYS SERPENS, L.

Gunth., Cat. Fishes VIII., p. 65.

The length of the head is contained thrice and two-thirds or four times in the distance between the gill-opening and the vent. Snout slender, produced into a point; cleft of the mouth very wide, half as long as the head. Eye of moderate size, two sevenths of the length of the snout. situated in the anterior third of the head. Teeth pointed, fixed, unequal in size, those of the intermaxillary and maxillary bi-serial, the others uni-serial. The intermaxillary teeth, the anterior ones of the mandible and those of the vomer, are canines. Gill-openings rather wide. Vertical fins moderately developed; the distance between the base of the pectoral and origin of the dorsal is twice or rather more than twice the length of the pectoral, which is about one-sixth of that of the head. The length of the body is somewhat more than half the length of the tail. Silvery, brownish-red above, whitish beneath.

Lane Cove, Port Jackson.

924. OPHICHTHYS CEPHALOZONA, Bleek.

Atl. Ichth. Mur., p. 49, pl. 12, fig. 2.—Gunth., Cat. Fishes VIII., p. 69.

Body purplish-brown; nape with a very broad, deep black cross band broadly edged with white in front and behind. Dorsal and anal fins tricoloured—brownish along the base, black along the middle, aud white along the margin. The length of the head is one-fourth of the distance of the gill-opening from the vent. Cleft of the mouth of moderate width, slightly extending behind the eye; snout pointed, with the upper jaw much projecting beyond the lower. Eye of moderate size, one-half the length of the snout, situated in the anterior third of the head. Posterior nostril in advance of the eye, anterior with a broad tube. The intermaxillary teeth are stout, forming an irregular group; these and a pair in front of the lower jaw, are stouter than the others, which are pointed, fixed and uni-serial. The length of the pectoral fin is rather more than one-fourth of that of the head; the dorsal commences above the end of the pectoral. Tail sometimes longer sometimes shorter than the body.

Cape York (Damel.).

925. OPHICHTHYS CALAMUS, Gunth.

Gunth., Cat. Fishes VIII., p. 74.

The length of the head is one-fifth of the distance of the gill-opening from the vent. Snout convex, obtusely conical; cleft of the mouth of moderate width, one-fourth of the length of the head; eye rather small, one-half of the length of the snout, situated above the middle of the mouth Teeth small, uni-serial, apparently in two series on the vomer. Lips fringed. Gill-openings narrow, and close together. Fins moderately developed. The dorsal fin commences at a short distance behind the angle of the mouth; pectoral fin one-fourth of the length of the head.

Tail nearly twice as long as the body. Brownish; lower parts whitish.

West Australia.

926. OPHICHTHYS CANCRIVORUS, Richards.

Voy. Erebus and Terror, p. 97, pl. 50, figs. 6-9.—Gunth., Cat. Fishes VIII., p. 78.

Coloration uniform. The length of the head is two-fifths or nearly one-third of the distance of the gill-opening from the vent; the length of the body from three-fourths to nearly two-thirds of that of the tail. Cleft of the mouth rather wide, about one-third of the length of the head; snout depressed, somewhat pointed. Eye of moderate size, nearly one-half of the length of the snout. Teeth granular, forming broadish bands. Length of the pectoral fin about two-sevenths or one-third of that of the head; dorsal commencing above the middle of the pectoral; dorsal and anal fins of moderate depth. A more or less distinct blackish spot anteriorly on the dorsal fin.

Port Essington

927. OPHICHTHYS ELAPSOIDES, Casteln.

Researches on the Fishes of Australia, p. 47.

The length of the head is equal to one-third of the distance of the gill-opening from the vent, and is contained nine times in the distance of the vent from the extremity of the tail. Snout long and pointed; upper jaw much longer than the lower; cleft of the mouth extending beyond the eye, which is very small. Teeth tubercular, covering the palate. Pectoral fin very small; the dorsal commences immediately behind the nape; dorsal and anal fins very low, not easily seen; the anal terminating at some distance from the extremity of the tail. Head yellow, with broad black transverse bands: one on the snout, one over the eye, a third on the back of the head, and one over the opercles, the body is scarlet, with twenty broad black bands, becoming narrower on the belly.

Cape York. Length nineteen inches.

928. OPHICHTHYS EPISCOPUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 244.

Moreton Bay.

SUB-FAMILY II. MURÆNIDÆ ENGYSCHISTÆ.

The branchial openings in the pharynx are narrow slits.

Genus MURÆNA, Cuv.

Scaleless. Teeth well developed. Gill-openings narrow. Pectoral fins none; dorsal and anal well developed. Two nostrils on each side of the upper surface of the snout; the posterior a narrow round foramen, with or without tube, the anterior in a tube.

Temperate and Tropical Seas.

929. MURÆNA HELENA. L.

Richards. Voy. Erebus and Terror, p. 80, pl. 49, f. 1-6.—Gunth. Cat. Fishes VIII., p. 96.

Posterior nostrils tubular; anterior nasal tubes of moderate length, being about equal to the vertical diameter of the eye. Teeth uni-serial. Intermaxillary and mandibular canine teeth but little larger than the lateral teeth; anterior vomerine teeth much the largest, seventeen to eighteen teeth on each side of the lower jaw. Gill-opening a small horizontal slit. Snout rather pointed; eye small, two-fifths of the length of the snout, situated above the middle of the length of the mouth. Cleft of the mouth wide, its length being about two-thirds of the distance between the angle of the mouth and the gill-opening. Tail a little longer than the body; the length of the head two-fifths of that of the trunk. Brown, with large whitish or yellowish spots, each of which contains smaller brown spots. Head and neck brown variegated with whitish. Gill-opening in a small brown spot; tail with a narrow white edge. Sometimes almost entirely brown, with small whitish spots more or less arranged in rings.

Australian Seas. (Sir John Richardson.)

930. MURÆNA TESSELATA, Richards.

Gunth., Cat. Fishes VIII., p. 106.—Bleek., Atl. Ichth. Mur., pl. 27-28, fig. 13.

Teeth uni-serial, young specimens with additional teeth, forming an inner maxillary series. Canines moderately developed; the mouth can be shut completely. Anterior nasal tubes much shorter than the vertical diameter of the eye. Gill-opening wider than the eye. Snout compressed, of moderate length; *eye rather small*, rather less than half the length of the snout, situated above the middle of the cleft of the mouth. Cleft of the mouth wide, its width being contained twice and one-third in the length of the head. Tail nearly as long as the body; *the length of the head is one-third of that of the trunk*. Head, body, and fins with large polygonal or rounded black spots separated by narrow white lines, or by distinct interspaces of the ground colour, all or most of the spots being wider than the interspaces (as in var. *isingteena*).

Endeavour River.

931. MURÆNA UNDULATA, Lacép.

Gunth., Cat. Fishes VIII., p. 110.

M. cancellata, Richards., Voy. Ereb. and Terr., p. 87, pl. 46, f. 1-5.

Teeth uni-serial, sometimes two additional teeth forming an inner maxillary series; mandibulary teeth from twenty-six to thirty in number on each side (in adults); canines strong, normally four pairs in the lower jaw, also two of the maxillary teeth are canines. *The mouth cannot be shut completely.* Anterior nasal tubes short. Gill-opening not wider than the eye. *Snout produced, pointed.* *Eye rather large,* more than half the length of the snout, situated above the middle of the cleft of the mouth. Cleft of the mouth very wide, one-half, or nearly so, of the length of the head. Tail contained twice and one-third in that of the trunk. Ground colour brown, or browish-black; the head and anterior part of trunk with irregular more or less distinct dark spots. Undulated, and partly reticulated, chiefly subvertical yellowish lines over the body and fins, becoming more distinct towards and on the tail. These lines are sometimes limited to the posterior part of the tail, and the body is sometimes mottled irregularly with brown (as in var. *Agassizii).* Gill-opening without black spot; *fins not white-edged.*

Port Jackson. Torres Straits (Chevert Exp.).

932. MURÆNA MACASSARIENSIS, Bleek.

Gunth., Cat. Fishes VIII., p. 111.—Bleek., Atl. Ichth. Mur., p. 104, pl. 37, fig. 3.

Teeth uni-serial, sometimes two additional teeth forming an inner maxillary series; mandibulary teeth about twenty on each side; canines rather strong, *but the mouth can be shut completely.* Anterior nasal tubes short. Gill-openings narrower than the eye. Snout somewhat produced, not twice so long as the eye, which is large and situated above the middle of the cleft of the mouth. Cleft of the mouth very wide, one-half of the length of the head. Tail scarcely longer than the body. The length of the head is contained twice and two-thirds in that of the trunk. Brown, with very fine vermiculated white lines, forming an irregular network, the area of each mesh darker in the centre. *Gill-opening without black spot. Fins with a narrow white margin.*

Cape York (Damel).

933. MURÆNA PICTA, Bl.

Gunth., Cat. Fishes VIII., p. 116.—Bleek. Atl. Ichth. Mur., pl. 26-28-29-45.

M. siderea, Richards. Voy. Erebus and Terror, p. 85, pl. 48, figs. 1-5.

Maxillary and intermaxillary teeth in a single series; *only one or two anterior vomerine teeth, which are not subulate, and not larger than the intermaxillary teeth.* The vomerine series is generally distinctly bifurcate anteriorly. Mandibulary teeth uni-serial, only the anterior subbi-serial. No distinct canine teeth. Anterior nasal tubes not quite as long as the vertical diameter of the eye. Snout of moderate length; eye small, less than one-half the length of the snout, situated above the middle of the cleft of the mouth, the length of which is nearly one-third of that of the head. Tail about as long as the body; the length of the head is contained twice and two-thirds in that of the trunk. Brownish-grey, with an infinite number of very small black spots separated by a fine light network; sometimes the spots are more or less confluent into larger irregular spots, giving a marbled appearance. Young specimens lighter coloured, with blackish ringshaped marks.

Port Jackson. Moreton Bay.

934. MURÆNA NUBILA, Richards.

Voy. Erebus and Terror, p. 81, pl. 46, fig. 6-10.—Gunth. Cat. Fishes, VIII., p. 117.

Skin smooth. Teeth uni-serial, without basal lobe; mandible with from fourteen to sixteen teeth on each side; canines moderately developed, the mouth shutting completely. The length of the anterior nasal tubes is rather less than the vertical diameter of the eye. Snout compressed, somewhat produced, eye small, one-half or two-fifths of the length of the snout, situated a little nearer to the angle of the mouth than to the end of the snout. Gill-opening as wide as the eye. Tail a little longer than the body; the length of the head is contained twice and one-half or twice and two-thirds in that of the trunk. Gill-opening without large black spot. Brownish, with irregular dark brown blotches, more or less confluent into transverse band-like spots. Anal fin with a black and white margin. Angle of the mouth brown, with a more or less distinct white spot in front.

Norfolk Island.

935. MURÆNA RICHARDSONII, Bleek.

Atl. Ichth. Mur., p. 100, pl. 42, fig. 2.—Gunth., Cat. Fishes VIII., p. 118.

Skin distinctly folded, the folds crossing each other and forming scale pouches. Teeth of old examples uni-serial, without basal lobe; in younger examples the anterior mandibulary and maxillary teeth, and also sometimes the vomerine teeth, are bi-serial. Mandible with from ten to fourteen teeth on each side. Canines rather small; the mouth can be shut completely. The length of the anterior nasal tubes is rather less than the vertical diameter of the eye. Snout compressed, of moderate length. Eye of moderate size. Gill.opening as wide as the eye. Tail a little longer than the body. The length of the head is contained twice and one-third in that of the trunk. Gill-opening without black spot. Brownish, marbled with darker on the back, the dark colour forms an incomplete network of wide meshes, and the tail is crossed by dark cross-bands. Young specimens without, large specimen with, a white edge to the anal fin.

Houtman's Abrolhos, West Australia.

936. MURÆNA FLAVOMARGINATA, Rüpp.

Gunth., Cat. Fishes VIII., p. 119.—Bleek., Atl. Ichth. Mur., p. 95, pl. 32 and 34, fig. 2-3.

Teeth uni-serial, except the vomerine series, which is forked in front. Canines of moderate size, the mouth shutting completely. Mandible with from eighteen to twenty-two teeth on each side, the two anterior being canines. Anterior nasal tubes very short. Snout rather high, of moderate length. Eye small, one-half or two-fifths of the length of the snout, situated above the middle of the cleft of the mouth, which is two-fifths of the length of the head. Gill-opening wider than the eye. Tail as long as the body. The length of the head is contained thrice and one-third, or thrice and four-fifths in that of the trunk. Gill-opening in a black spot. Body brown, densely marbled with black; head and end of the tail quite black. Sometimes two black depressed lines along the anal fin; fins frequently with a white edge.

Norfolk Island (Jukes).

937. MURÆNA CALLORHYNCHA, Gunth.

Gunth., Cat. Fishes, VIII., p. 122.

Maxillary teeth, and the anterior of the mandible bi-serial; the others uni-serial. Canines short. Mandible with about twenty closely set teeth in the outer series on each side. Snout of moderate length, obtuse, nearly thrice as long as the eye, which is small. Gill-opening still narrower than the eye. The length of the cleft of the mouth is contained twice and one-third in that of the head. Fins very low, the dorsal commencing behind the gill-opening. Tail a little longer than the body. The length of the head is contained thrice and three-fourths in that of the trunk. Nearly uniform greyish-olive (in spirits); snout white with a brown band on each side, running from above the orbit over the front nostril to the edge of the upper lip.

Freemantle, West Australia.

938. MURÆNA AFRA, Bl.

Gunth., Cat. Fishes, VIII., p. 123.—*M. prasina,* Richards. Voy. Erebus and Terror, p. 93.

Teeth uni-serial in old examples, except the vomerine which are sometimes bi-serial; in young examples generally all bi-serial. Mandible with about twenty teeth on each side, the four anterior much longer than the others and like the canines rather elongate. Anterior nasal tubes half as long as the eye. *Gill-opening nearly as wide as the eye.* Snout narrow, produced, pointed. Eye of moderate size, half the length of the snout, situated somewhat nearer to the angle of the mouth than to the end of the snout. Cleft of the mouth wide, two-fifths of the length of the head. Tail longer than the body. The length of the head is contained twice and one or two-thirds in that of the trunk. Dorsal fin not elevated. Brownish-black; fins without light edge. Colour in fresh specimens, green.

Port Jackson. Australian coasts.

939. MURÆNA NEBULOSA, Bl.

Gunth., Cat. Fishes, VIII., p. 130.

M. variegata, Richards. Voy. Erebus and Terror, p. 94, pl. 47, f. 11-16.

Teeth obtuse, molar-like. Yellowish, with fine vermiculated black lines, and two series of large black spots. the upper running along the side of the back, the lower along the lower half the body; each spot includes one or more white spots; more or less regular black bands cross the abdomen connecting the spots of the lower series. The black spots are sometimes reduced to starlike figures.

Torres Straits. (Chevert Exp.)

940. MURÆNA PSEUDOTHYRSOIDEA, Bleek.

Atl. Ichth. Mur. p. 104, pl. 46, fig. 2.—Gunth., Cat. Fishes, VIII., p. 112.

Teeth uni-serial; mandible with about eighteen teeth on each side; canines moderately developed; the mouth cannot be shut completely. Gill-openings not larger than the eye. Snout of moderate length, twice as long as the eye, which is rather small, and nearer to the end of the snout, than to the angle of the mouth. Cleft of the mouth wide, its length being contained twice and one-fourth in that of the head. Tail not quite so long as the body. The length of the head is two-fifths of that of the trunk. Brown with very fine vermiculated white lines forming an irregular network. *Gill-opening without black spot;* fins without white margin.

Darnley Island. (Chevert Exp.)

941. MURÆNA FIMBRIATA, Benn.

Gunth., Cat. Fishes, VIII., p. 108.—*M. bullata,* Richards. *M. isingleenoides,* Bleek. Atl. Ichth. Mur. p. 91, pl. 35, fig. 1.

Teeth uni-serial, without basal lobe; younger examples sometimes with two or three additional teeth, forming an inner maxillary series. Canines well developed, but the mouth can be shut almost completely. Anterior nasal tubes much shorter than the vertical diameter of the eye. Gill-opening not wider than the eye. Snout narrow, somewhat produced; *eye of moderate size,* half the length of the snout, situated above the middle of the cleft of the mouth. Tail a little longer than the body, the length of the head is contained twice and one-fourth or one-third in that of the trunk. Body and tail with three more or less regular longitudinal series of round black spots, mostly larger than the eye but smaller than the interspaces. Fins with a white margin. Head with small black spots.

Port Essington. Torres Straits. (Chevert Exp.)

942. MURÆNA MELANOSPILA, Bleek.

Atl. Ichth. Mur., p. 90, pl. 42, fig. 1.—Gunth., Cat. Fishes, VIII., p. 109.

Teeth uni-serial, without basal lobe; about nineteen on each side of the mandible. Canines much larger than the other teeth and the jaws do not shut. Anterior nasal tubes very short. Gill-opening wider than the eye. Snout short and compressed; eye small, one-half of the length of the snout, situated above the middle of the cleft of the mouth, the length of which is contained twice and two-thirds in that of the head. Tail a little longer than the body, the length of the head is one-third of that of the trunk. Brown, body and tail with round or oval black spots, generally larger than the eye, longitudinally arranged. Spots on the head much the smallest. Fins with a narrow white edge.

Darnley Island. (Chevert Exp.)

Genus GYMNOMURÆNA, Bleek.

Scaleless. Teeth numerous, small, pointed. Gill-openings narrow. Fins none, except a rudimentary one round the end of the tail. Two pairs of nostrils on the upper surface of the snout, the posterior being a small round foramen.

Tropical Seas.

943. GYMNOMURÆNA CONCOLOR, Rüpp.

Gunth., Cat. Fishes, VIII., p. 134.

Uniform brown. Maxillary and mandibulary teeth in a double series; no distinct canine teeth. Eye of moderate size; posterior nostrils not tubular. Tail but little longer than the body.

Cape York. (Damel.)

Dr. Bleeker and Dr. Gunther both include in this family a very remarkable form of Fishes under the name of *Leptocephalus* Gronov. They are believed by some to be the larval form of a *Conger*, but in truth little seems to be known about them.

Genus LEPTOCEPHALUS, Gronov.

Form compressed, elongate, band-shaped, body pellucid, becoming white in spirits, like a tape worm; skeleton entirely cartilaginous. Fins generally rudimentary.

Found floating in the sea.

944. LEPTOCEPHALUS MORRISII, Gm.

Gunth., Cat. Fishes, VIII., p. 139.—*L. altus*, Richards. Voy. Erebus and Terror, p. 51, pl. 30, figs. 8-10. (Perhaps another species.)

Body compressed, its depth being about equal to the length of the head. Sometimes the body sometimes the tail the longer. End of the tail generally rounded. Snout obtusely rounded. Eye rather large. Tongue distinct. Pectoral fins developed. Jaws with or without small teeth. Chorda dorsalis without ossifications.

Australia. (Haslar Collection.)

FAMILY XVI. PEGASIDÆ.

Body entirely covered with bony plates, anchylosed on the trunk and moveable on the tail. Barbels none. The margin of the upper jaw is formed by the intermaxillaries and their cutaneous prolongation, which extends downwards to the extremity of the maxillaries. Gill-cover formed by a large plate, homologous to the operculum, præoperculum and suboperculum; interoperculum a long fine bone, hidden below the gill-plate. One rudimentary branchiostegal. The gill-plate is united with the isthmus by a narrow membrane; gill-opening narrow, in front of the base of the pectoral fin. Gills four, lamellated. Pseudo-branchiæ and air-bladder absent. One short dorsal and anal fin, opposite to each other. Ventral fins present. Ovarian sacs closed.

Genus PEGASUS, L.

Body broad, much depressed. Pectoral fins horizontal, broad, long, composed of simple rays, some of which are sometimes spinous. Ventral fins one or two-rayed, the outer ray being long. Upper part of the snout produced into a longer or shorter process. Mouth inferior, toothless. Suborbital ring well developed, forming a suture with the gill-cover. Intestinal tract rather short with one or two complete circumvolutions. Vertebræ not numerous, thin; ribs none.

Indian and Australian Seas.

945. PEGASUS NATANS, L.

Gunth., Cat. Fishes, VIII., p. 148.

D. 5. A. 5. P. 11. V. 3. Vert. 7 + 14.

Tail (without caudal fin) as long as, or longer than, the body to the end of the snout. Tail composed of twelve rings, tapering and very much flattened behind. Ridges on the upper side of the body obtuse, without tubercles; shields uniformly finely granulated. Pectoral rays equally slender. Snout prolonged into a long flat sword-like process, truncated in front and denticulated on the side, the teeth directed backwards. Tail with broad brown cross-bands, one below the dorsal being the most constant. Dorsal and pectoral fins with brown spots.

Moreton Bay. Torres Straits.

946. PEGASUS LANCIFER, Kaup.

Gunth., Cat. Fishes VIII., p. 149.

D. 5. A. 5. P. 15. V. 2.

Tail (without caudal fin) much longer than the body to the end of the snout, composed of fourteen or fifteen rings, of which the six posterior are more or less confluent, much depressed, tape-like. The trunk is broad, exceedingly depressed, nearly flat above, with narrow vertical sides. The dorsal ridges are usually linear, and from the centre of each shield radiate raised lines, forming star-like figures. Pectoral rays equally slender. Snout prolonged into a very thin, four-ridged process, about twice as long as the orbit; the ridges are beset with minute spines. Upper parts nearly uniform brown.

Tasmania.

ORDER V. *LOPHOBRANCHII.*

The gills are not laminated, but composed of small rounded lobes, attached to the branchial arches. Gill-cover reduced to a large simple plate. Air-bladder simple, without pneumatic duct. A dermal skeleton, composed of numerous pieces arranged in segments, replaces more or less soft integuments. Muscular system not much developed. Snout produced. Mouth terminal, small, toothless, formed as in Acanthopterygians.

FAMILY SYNGNATHIDÆ.

Gill-openings reduced to a very small opening near the upper posterior angle of the gill-cover. One soft dorsal fin; no ventrals, and sometimes one or more of the other fins also absent.

First Group *Syngnathina.*

Tail, *not* prehensile, generally with a caudal fin.

Genus SYNGNATHUS, Artedi.

Body with the ridges more or less distinct, the dorsal edge of the trunk not being continuous with that of the tail. Pectoral fins well developed, caudal present. Dorsal fin opposite, or near to vent. Humeral bones firmly united into the "breast ring." Males with an egg pouch on the tail, the eggs being covered by cutaneous folds.

Temperate and Tropical Coasts.

947. SYNGNATHUS SEMIFASCIATUS, Gunth.

Gunth., Cat. Fishes VIII., p. 162.—*L. semistriatus*, Kaup.

D. 38. Osseous rings 21 + 49.

Lateral line interrupted. Adult females have the trunk strongly compressed and rather elevated, its depth being one-fifth of its length. The length of the snout is equal to the distance of the anterior margin of the eye from the middle of the second body ring. Head with fine striæ, but without ridges. Shields smooth. The length of the body is contained once and one-third in that of the tail. Vent below the end of the anterior third of the dorsal fin. Caudal fin well developed. Upper part of the trunk with numerous, very small, light, dark edged ocelli, the lower part with a narrow brown vertical bar on each ring. A white stripe, edged with black above and below, runs from the lower part of the snout, through the eye, over the gill-cover.

South Australia, Tasmania, and Port Phillip.

948. SYNGNATHUS PELAGICUS, L.

Gunth., Cat. Fishes VIII., p. 165.

D. 29-31. Osseous rings 17 + 32-35.

The length of the snout equals the distance of the front margin of the orbit from the root of the pectoral fin. A distinct ridge along the median line of the nuchal shields; supraorbital ridge not continued over the temple; anterior part of the operculum with a faint ridge. Shields without spines. Lateral line interrupted. Tail longer than the body; caudal pouch short, about half as long as the body. Dorsal fin commencing somewhat in advance of the vent. Caudal well developed. Lower half of the side of the abdomen with vertical silvery bars, becoming broader and of a whitish colour on the upper half. Brown cross bands are placed alternately between the silvery bars, so that the brown bands are grouped together in twos or threes, the bands of each group more or less confluent. In males the silvery bars are represented by spots; a brown band through the eye and along the snout. Dorsal fin with oblique brown bands.

South Australia.

949. SYNGNATHUS GRAYII, Kaup.

Gunth., Cat. Fishes, VIII., p. 169.

D. 20. Osseous rings 18 + 35.

Base of the dorsal fin elongated. The length of the snout is less than one-half of that of the head; it is provided with series of minute spines; forehead rather high, its profile abruptly descending towards the snout. Occiput and neck elevated into a crest; eyes large, prominent; edge of the orbit rough. Operculum with radiating striæ, and a strong ridge bent upwards; humerus with a trihedral prominence. Body not deeper than broad; shields without spines, but the ventral edges of the caudal rings forming the pouch are horizontally dilated. Tail one-half longer than the body. Vent below the middle of the dorsal fin, which stands on four rings. Caudal fin very small. Egg-pouch at least half as long as the tail. A deep brown spot on the side of the fourth body ring.

Australia? (Gunther).

950. SYNGNATHUS MARGARITIFER, Peters.

Gunth., Cat. Fishes, VIII., p. 171.

D. 21-23. Osseous rings 20 + 35-37.

Operculum crossed by a straight ridge. The length of the snout is somewhat more than half that of the head. A low ridge along the median line of the snout, and of the crown of the head and neck; supraorbital edge continued into a feeble ridge on the side of the crown. Shields without spines. Tail about twice as long as the trunk. *Dorsal fin occupying two body and four or five tail-rings.* Pouch extending to or beyond the sixteenth tail-ring. Brown with mother of pearl coloured dots.

Port Jackson.

951. SYNGNATHUS PŒCILOLÆMUS, Peters.

Gunth., Cat. Fishes VIII., p. 174.—Casteln., Proc. Zool. Soc., Victoria, Vol. II., p. 78.

D. 28. Osseous rings 20 + 49.

Operculum with a straight ridge. Snout nearly twice as long as the postorbital part of the head. A low ridge along the median line of the snout and of the crown of the head and neck; supraorbital edge continued into a feeble ridge on the side of the crown. Shields without spines. Tail more than twice as long as the trunk. Dorsal fin occupying the anal and six caudal rings. Lower side of the head with dark spots; body with very small ocellated dots.

South Australia.

952. SYNGNATHUS CURTIROSTRIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 79.

D. 20. Osseous rings 18 + 42.

The length of the snout is contained twice in the rest of the head and is once and a half the diameter of the orbit. Head one-twelfth of the total length. The snout has a strong longitudinal ridge on its upper part, and a feeble one on each side; the operculum is covered with deep, punctured, radiating striæ, with its upper edge elevated like a curved ridge; but no longitudinal ridge on its surface. The body is quadrilateral, with a faint ridge on each side, extending to the vent; on the first rings of the tail there is an oblique ridge, which runs into the upper edge on the fifth ring. The dorsal fin occupies the first five tail rings; the caudal is longer than the two last tail rings, is rounded and formed of six rays. Colour (in spirits) dark brown, with irregular silvery spots on the lower part of the head and the first few segments of the body; these spots are surrounded by a dark line; the pectoral and dorsal fins are of a light colour, speckled with brown. Length four and a half inches.

South Australia.

953. SYNGNATHUS BREVICAUDIS, Casteln.

Researches Fishes of Australia, p. 48.

D. 25. Osseous rings 20 + 28.

Operculum without ridge; base of dorsal fin elevated. Snout straight, its length more by half than the rest of the head; the interorbital space broad and concave, with several small ridges, the operculum with small radiating ridges; body rather deeper than broad; shields without spines; tail once and a half as long as the body without the head. Vent nearly below the middle of the dorsal fin; the ventral ridge of the body meets the lower caudal ridge at the vent; the tail continues very thick to its extremity, which is abruptly rounded and furnished with a very small caudal fin. The pectoral fins are large, of sixteen rays; the dorsal fin extends over seven shields. Dark brown, (dried) variegated with white; snout white.

Swan River. Length six inches.

954. SYNGNATHUS TIGRIS, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 39.

Port Jackson.

955. SYNGNATHUS INTESTINALIS, Rams.

Proc. Linn. Soc. N.S. Wales, Vol. V., p. 494.

Genus ICHTHYOCAMPUS, Kaup.

The dorsal edges of the trunk and tail are continuous, but sometimes very indistinct. Pectoral and caudal fins present. Dorsal fin opposite or near to the vent. Males with an egg-pouch on the tail, the eggs being covered by cutaneous folds.

Indian and Australian Seas.

956. Ichthyocampus scalaris, Gunth.

Gunth., Cat. Fishes VIII., p. 177.

D. 25. Osseous rings 19 + 39.

Operculum without ridge. The length of the head is about one-ninth of the total; snout half as long as the head in adult examples, and as long as the postorbital portion in young. Upper part of the head with scarcely a trace of a ridge along the nuchal shields. Body as deep as broad, with very obtuse ridges. Tail twice as long as the trunk. Dorsal fin standing on seven rings, three of which belong to the body. Caudal very short. Body and tail with from thirteen to fifteen irregular broad brown cross-bands, more distinct in young than in adult examples. A narrow brown cross bar on the suture between every two ventral shields. Lower side of the head and breast with deep brown dots.

Freycinet's Harbour (Herald).

957. Ichthyocampus filum, Gunth.

Gunth., Cat. Fishes VIII., p. 178.

D. 14. Osseous rings 16 + 47-48.

Head and snout very short, the length of the former being two-fifths of its distance from the vent. Snout turned upwards, one-third of the length of the head. Head and body compressed, without ridges. The length of the body (head included) is contained twice and two-thirds in that of the tail; pouch as long as the trunk, lined with soft membrane. Vent opposite to the middle of the dorsal fin. Pectoral fin short and narrow; caudal well developed. Narrow brownish black cross bars, corresponding to the sutures between the body rings.

Freycinet's Harbour.

958. Ichthyocampus maculatus, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 353, pl. 17 fig 2.

Darnley Island (Chevert Exp.)

959. ICHTHYOCAMPUS ANNULATUS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 364, pl. 10, fig. 6.

Port Darwin.

Genus NANNOCAMPUS, Gunth.

Body with obsolete ridges, the dorsal edges of the trunk and tail being continuous. Pectoral fin none; caudal rudimentary; dorsal short, opposite to the vent. Male with the egg-pouch on the tail, formed by the dilated lower edges.

Australia.

960. NANNOCAMPUS SUBOSSEUS, Gunth.

Gunth., Cat. Fishes VIII., p. 178.

D. about 10. Osseous rings 16 + 35.

Head and snout extremely short, the length of the former being contained twice and two-thirds in its distance from the vent. Snout not longer than deep, about two-sevenths of the length of the head. The bones on the *lower* side of the head very well ossified, this side being as broad and convex as the upper. The entire head finely granulated, without ridges. Body ridges obsolete; body slightly compressed. The length of the body (head included) is one-half of that of the tail; pouch as long as the trunk, formed by the dilated lower caudal edges. Vent opposite to the fore part of the dorsal fin. Caudal fin very small. Brown, finely marbled with darker and lighter; body and tail with some narrow, irregular, bluish cross-bands.

Freycinet's Harbour (Herald).

Genus UROCAMPUS, Gunth.

Body elongate, compressed, with distinct longitudinal ridges; the upper edge of the trunk continuous with that of the tail; lateral line continuous with lower caudal edge. Tail elongate, quadrangular, tapering. Pectoral and caudal fins developed;

the dorsal is placed entirely on the tail, at a great distance behind the vent.

Manchuria. Australia.

961. UROCAMPUS CARINIROSTRIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 200.

"Snout rather turned upwards, very short, being contained once and a half in the diameter of the eye, and nearly three times in the length of the head; it is not abruptly separated from the forehead, and goes slanting to its extremity; the supraorbital ridges are very strong, and sometimes converge in front to form the medium ridge of the snout; in other specimens there is between them a rounded, sharp, ridge; there is a short spine at the anterior angle of the eye; the eyes are very prominent; occiput and nuchal shields with ridges; operculum covered with strong radiated striæ, and almost carinated; the pectorals are not much longer than the orbit, and not quite one-half of one of the body shields; the snout is contained about seven times in the trunk; the distance from the anus to the beginning of the dorsal is about equal to one-half its distance to the end of the snout; the body has three ridges, the upper one much more marked than the others; the central one ending at the base of the tail; each shield has two small longitudinal ridges, and is perpendicularly striated; the osseous rings number nine on the body, seven more on the tail before the dorsal, which begins on the seventeenth and extends over the three following; behind these are forty-five or forty-six others; the caudal is very minute; no anal; the tail is tapering and very thin, its ridges much less marked than those of the body. The general colour is a light green, with dark spots corresponding to the centre of the body rings; eye of a golden hue; an indistinct black stripe on the side of the mouth." (Castelnau).

Port Phillip. Length three to three and a half inches, (taken with shrimps).

Genus LEPTOICHTHYS, Kaup.

Body with the ridges well developed. Pectoral and caudal fins present; the latter elongate. Dorsal fin of moderate length, opposite to the vent. Humeral bones firmly united. The egg receptacle on the abdomen.

Australia.

I have never seen Kaup's characters of this genus, and Dr. Gunther makes no mention of it except to say that the caudal fin is very long. The characters I have given above are however sufficient to indicate the genus.

962. LEPTOICHTHYS FISTULARIUS, Kaup.

Gunth., Cat. Fishes VIII., p. 187.

Snout very long, thin, and much compressed, extended in the same plane as the finely shagreened head. Body unusually elongated, hexagonal, with flat back and belly without intermediate scales. All the fins are much developed, especially the caudal. The gill-opening is a longer slit than usual. Head oval, occipital shield small, and a furrow commencing at the orbit accompanies the rostral crest. Up to the anus there are twenty-seven body rings, twenty-four of them before the dorsal fin, which stands on nine rings, three of them belonging to the body. The tail is four-cornered, higher than it is broad, and composed of twenty-four long rings. Colour yellowish-brown, with a black cross-band on each ring, ventral piece of the pectoral ring and the gill-cover silvery. Entire length twenty-two inches. Snout 1·97 inch, head and snout 2·76 inches, dorsal fin 1·97 inch, tail 9·46 inches, middle ray of caudal fin (not entire) ·091 inch. (Kaup.)

King George's Sound.

963. LEPTOICHTHYS CASTELNAUI.

Leptoichthys fistularius, Casteln. Proc. Zool Soc. Vict., Vol. II., p. 77.

"Head five times in the total length; snout up to the nostril contained seven times and one-third in the same, it is long, compressed, and united to the head by a gradual profile; the mouth opens superiorly; the orbit is contained seven times in the length of the head, and the space between the nostril and the anterior edge of the eye is equal to half the diameter of the orbit. The upper part of the head is covered with very minute scales, which have on the operculum a radiated disposition. The pectorals are large and formed of twenty-three rays, the body pentagonal and flat on its upper and lower surfaces; the anus is below the twenty-sixth ring; the dorsal fin begins on the middle of the twenty-fourth ring, and extends over the eight following; it is high and composed of thirty-four rays; the tail is formed of twenty rings, in form similar to the body, the last rings longer, the caudal is as long as the snout, rhomboidal, of ten rays, the four central ones prolonged into filaments. The upper surface of the body is granulated. Colour olive, with the lower parts yellow, caudal fin black."

South Australia.

The foregoing is Count Castelnau's description almost verbatim, and I judge from a comparison between his description and that given of Kaup's Fish, that they are distinct species. I therefore change the name of this species to *Castelnaui.*

964. LEPTOICHTHYS CRISTATUS, *n. sp.*

D. 24. Osseous rings 18 + 27.

Body compressed, twice as high as wide, with seven well marked ridges: two dorsal, one on each side, and three ventral. The head is compressed in front of the eye into a very sharp high ridge, the mouth opens upwards and is almost vertical, beneath there is a prominent ridge. The eye is large and nearly in the middle of the head, the operculum is covered with radiating striæ, the tail is longer than the head and trunk united and is perfectly quadrangular, the lower ridges are continuous with those of the body, but the upper pass those of the body by one ring in a different plane. The dorsal fin stands upon five body and two tail rings; the pectorals are broad but short; the caudal is elongate and pointed, as long as the last five tail rings. Colour (in spirits) uniform dark reddish brown. Length four and a half inches.

West Australia. (Macl. Mus.)

Genus STIGMATOPHORA, Kaup.

Body depressed, with the ridges obsolete, those of the trunk being continuous with those of the tail; shields covered with soft skin. Pectoral fin developed, caudal absent, the tail tapering to a very fine point. Dorsal fin very long. Males with a caudal pouch formed by cutaneous folds.

Australia.

965. STIGMATOPHORA ARGUS, Richards.

Trans. Zool. Soc. III., p. 183, pl. 7, fig. 2.—Gunth., Cat. Fishes, VIII., p. 189.

D. 49-52. Osseous rings 20 + about 75.

Snout very long, about twice as long as the remaining part of the head. Operculum with a slight ridge in young examples, nearly entirely disappearing in old. Vent below the middle of the dorsal fin. Tail more than twice as long as the trunk; egg-pouch shorter than the trunk. Upper parts with numerous small, black, white-edged ocelli, sometimes irregularly arranged, sometimes forming longitudinal or transverse series.

Tasmania. Port Jackson.

966. STIGMATOPHORA NIGRA, Kaup.

Gunth., Cat. Fishes, VIII., p. 190.

D. 39-40. Osseous rings 17 + about 72.

Body very depressed. Snout very long, nearly twice as long as the remaining part of the head. Operculum with a distinct longitudinal ridge. Vent below the posterior third of the dorsal fin. Tail more than twice as long as the trunk; egg-pouch extending over fourteen rings. Upper parts uniform brownish (in spirits); abdomen with a brown cross-bar on each suture between the rings.

Port Jackson. Port Phillip.

Count Castelnau makes mention of a species which he names *S. boops*, in his list of Melbourne Fishes (Proc. Zool. Soc., Vict., Vol. I.) but he gave no description of it, and was uncertain if it really differed specifically from *S. nigra.*

967. STIGMATOPHORA OLIVACEA, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 77.

D. about 45. Osseous rings 19 + 84.

Snout rather more than twice the length of the remaining part of the head; the length of the head is a little less than six times in the total length; the opening of the mouth is upwards; a longitudinal ridge runs all along the upper surface of the snout; operculum without any ridge; vent below the middle of the dorsal fin; egg-pouch extending over thirteen rings. The pectoral fins rather large, of eighteen rays. Colour light olive, becoming grey below; egg-pouch orange; all the rings present an obscure tinge at their junction, and these very inconspicuous transverse bands extend on to the snout.

South Australia. Length nine inches.

968. STIGMATOPHORA UNICOLOR, Casteln.

Researches on the Fishes of Australia, p. 49.

Snout once and a half as long as the remaining portion of the head; operculum with a strong, distinct, longitudinal, rather oblique ridge; head ended by a broad trifid spine in the centre, and a sharp spine on each side; vent below the anterior fourth of the dorsal fin; tail as long as the space from the vent to the posterior third of the snout; body rings seventeen. Colour entirely of a dirty yellow without spots; the upper parts rather brown.

Port Walcott (West Australia). Length six inches.

969. STIGMATOPHORA DEPRESSIUSCULA, *n. sp.*

D. 49. Osseous rings 19 + about 66.

Body depressed. Snout very long and slender, more than twice the length of the rest of the head; a prominent tubercle on each side of the snout in front of the eyes; operculum striated, but scarcely ridged; the vent under the anterior third of the dorsal fin; the egg-pouch slightly longer than the trunk; tail more than twice the length of the trunk; ventral surface very flat; body ridges laterally dilated, but not so much as in *S. nigra.* Colour (in spirits) reddish-brown, faintly marbled with darker brown; two longitudinal lines of small dark brown or black spots along the back between the two faint dorsal ridges. Length seven inches.

King George's Sound.

970. STIGMATOPHORA GRACILIS, *n. sp.*

D. 58. Osseous rings 20 + 56.

Elongate, slender, scarcely depressed. Snout twice the length of the rest of the head, considerably dilated and turned up at the point, vent under the middle of the dorsal fin; tail double the length of the trunk. Colour (in spirits) pale reddish or yellowish brown, with brown cross-bars on the sutures of the body rings, most distinct on the back, a broad brown band between and on the eyes.

Tasmania. Length five inches.

Second Group *Hippocampina.*

Tail prehensile, without a caudal fin.

Genus GASTROTOKEUS, Kaup.

Body depressed, the lateral line running along the margin of the abdomen. Shields smooth. Tail shorter than the body, prehensile. Pectoral fins. The males carry the eggs embedded in soft membrane on the abdomen, without a pouch being formed by a lateral expansion of the integuments.

Indian and Australian Seas.

971. GASTROTOKEUS BIACULEATUS, Bl.

Gunth., Cat. Fishes VIII., p. 194.

D. 40-45. P. 17-23. Osseous rings 18 + 45-55.

Superciliary margin terminating behind in a more or less distinct spine. Old individuals sometimes with minute filaments on the lower side of head, body and tail. Origin of the dorsal fin nearly opposite to vent.

Cape York, Port Essington, South Coast New Guinea.

Genus SOLENOGNATHUS, Kaup.

Body compressed, deeper than broad, only in adult females somewhat dilated. Shields hard, rugose, with round or oval interannular plates; no elongate processes. Tail shorter than the body, prehensile. Pectoral fins.

Chinese and Australian Seas.

972. SOLENOGNATHUS HARDWICKII, Gray.

Gunth., Cat. Fishes VIII., p. 195.

D. 43-45. Osseous rings 26-27 + 55-60.

Dorsal surface slightly concave or flat. Shields very rough and rugose, but with scarcely any spines; operculum with radiating granulated lines; a cluster of prominent tubercles on the hinder part of the superciliary edge.

Houtman's Abrolhos.

973. Solenognathus spinosissimus, Gunth.

Gunth., Cat. Fishes VIII., p. 195.*

D. 35. Osseous rings 27 + 55.

Dorsal surface slightly convex. All parts covered with small but very distinct spines; the radiating lines of the operculum spiny. Orbital edge denticulated, but without prominent tubercles above.

Tasmania.

Genus Phyllopteryx, Kaup.

Body compressed or as broad as deep. Shields smooth, but some or all of them are provided with prominent spines or processes on the edges of the body; some of the processes with cutaneous filaments. A pair of spines on the upper side of the snout and above the orbit. Tail about as long as the body, prehensile. Pectoral fins. The eggs are carried embedded in soft membrane on the lower side of the tail.

Australia.

974. Phyllopteryx foliatus, Shaw.

Gunth., Proc. Zool. Soc., 1865, pl. 14, and Cat. Fish. VIII., p. 196.

D. 30. Osseous rings 18 + 35.

Trunk much elevated, especially in females, in which its depth sometimes equals the length of the snout. A pair of small spines on the upper part of the snout, much nearer to the eye than to its extremity; a pair of superciliary spines. A long occipital and nuchal process, which as well as the other processes on the body, bear cutaneous appendages. Pairs of long divergent processes along the back of the twelfth body-ring, and on the first, tenth, sixteenth, twenty-fourth and twenty-seventh tail-rings. A similar pair of ventral processes on the ninth body-ring. Scarlet or orange-coloured, with numerous small, round, yellow spots. Each of the nine anterior body-rings with a violet band on the lower half; two or three similar bands before the vent.

Port Jackson, South Australia, Tasmania.

975. PHYLLOPTERYX EQUES, Gunth.

Proc. Zool. Soc., 1865, p. 327, pl. 15, and Cat. Fishes VIII., p. 197.

D. 37. Osseous rings 19 + 36.

The snout is as long as the distance of the front margin of the orbit from the hind part of the nape; it bears a pair of small spines behind the middle of its upper edge, a pair of minute barbels at the chin, and a pair of long appendages in the middle of its lower part. The forehead bears an erect, broad, subquadrangular crest, with a shorter single spine behind; a horizontal spine above each orbit; a cluster of spines with narrow appendages on the occiput. Nape of the neck with a long spine, dilated at the base into a crest, and carrying a long bifid appendage. The trunk is compressed, somewhat dilated, strongly arched on the back, and with two deep indentations in its lower profile. The spines are of three kinds: 1. The band bearing spines are the strongest, strongly compressed, not flexible, each terminating in a pair of short points. There are one pair of these spines in the middle of the back, and one on each of the three prominences of the abdominal outline; the flaps are long and bifid. 2. Very long, compressed and somewhat flexible spines without appendages; these occupy in pairs the uppermost part of the back, and in a single series the median line of the belly. 3. Small short conical spines run in series along the lateral edges of the belly; a pair of similar spines in front of the lower part of the base of the pectoral fin. Tail quadrangular, with sharp edges, and with five pairs of band-bearing spines along its upper side. Dorsal fin situated entirely on the tail. (Gunther).

Port Lincoln.

976. PHYLLOPTERYX ELONGATUS, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 76.

Like *P. foliatus* but much smaller, the spine on each side of the snout lateral, not superior; body more elongate, its greatest height in the female being only half the length of the snout; the foliated appendages of the processes are much shorter, broader, and of an oval form. The colour is lighter; the muzzle, lower parts of the head and body and the sides of the tail are white; the upper parts of the snout, head, and body are of a lilac colour, covered with numerous round white spots. The foliated appendages and the end of the tail are black.

South Australia.

977. PHYLLOPTERYX TÆNIOPHORUS, Gray.

Proc. Zool. Soc., 1859, p. 38, pl. 7.—Gunth., Cat. Fishes, VIII., p. 197.

D. 25. Osseous rings 21 + 45.

Body as broad as deep, as long as the tail. Each shield with a prominent spine on each edge, except on the lower side of the prehensile portion of the tail. Snout with a pair of spines above, in the middle of its length. A pair of supra and infra-orbital spines; several spines on the median line of the crown and nape. Many of the spines are band-bearing, but these do not differ in form or size from the others. The vent is below the middle of the dorsal fin. Brown irregular dark-brown bands across the back.

Freycinet's Harbour. (Herald.)

Genus HIPPOCAMPUS, Leach.

Trunk compressed, more or less elevated, composed of from ten to twelve rings. Shields with more or less prominent tubercles or spines. Occiput compressed into a crest, terminating at its supero-posterior corner in a prominent knob (coronet). Supra-orbital, temporal and humeral regions with prominences. Tail prehensile, finless. Pectoral fins. Eggs carried in a sac at the base of the tail, opening near the vent.

All Temperate and Tropical Seas.

978. HIPPOCAMPUS ABDOMINALIS, Kaup.

Gunth., Cat. Fishes, VIII., p. 199.

Dorsal fin 28-31. Tubercles not much developed and very obtuse; those on the head sometimes with simple filaments. Length of the snout rather more than, or equal to, the distance between the posterior margin of the orbit and the gill-opening in adult examples, but shorter in young ones. Body generally with large round brown spots, more or less confluent into bands on the hinder part of the tail; head with much smaller round brown spots, of which those round the orbit are the most constant. Sometimes uniform blackish brown.

Tasmania.

979. HIPPOCAMPUS ANTIQUORUM, Leach.

Gunth., Cat. Fishes, VIII., p. 200.

Dorsal fin 19. Tubercles generally well developed on the head and body, and sub-acute, rarely blunt. Length of the snout equal to the distance between the hind margin of the orbit and gill-opening. Spines on the head and neck sometimes with simple filaments. Brown with bluish-white dots, more or less confluent into lines on the lower part of the side and gill-cover; dorsal fin with a black sub-marginal band.

Cape York. (Damel.)

980. HIPPOCAMPUS BREVICEPS, Peters.

Gunth., Cat. Fishes, VIII., p. 200.

Dorsal fin 19-21, standing on five rings, two of which belong to the tail. Some of the tubercles are prominent but obtuse. Snout very short, scarcely as long as the operculum. Supra-orbital process well developed, subvertical, triangular. Coronet as high as the orbit, with ridges, but without spines at the top. Eleven body-rings. Hind part of the trunk considerably dilated. Head and body with numerous very small white dark-edged ocelli; operculum with brown dots besides; tail with narrow irregular yellowish rings.

Tasmania, South Australia, Port Phillip.

981. HIPPOCAMPUS ANGUSTUS, Gunth.

Gunth., Cat. Fishes, VIII., p. 200.

Dorsal fin 19-20, standing on two body and two tail-rings. Eleven body-rings. Body but little dilated in males, in which its greatest depth is about half the length of the head; females still narrower. Tubercles prominent, acute, without tentacles. Supra-orbital spine erect, simple, pointed; lower breast spines double on each side. Coronet rather low, connected by a narrow, concave, bony bridge with the occipital knob. The length of the snout equals the distance between the anterior margin of orbit and the gill-opening. Snout, head, body, and dorsal fin finely reticulated with brown; some specimens covered with minute white dots besides.

Freycinet's Harbour. (Herald.)

982. HIPPOCAMPUS NOVÆ-HOLLANDIÆ, Steind.

Gunth., Cat. Fishes, VIII., p. 201.

Dorsal fin 17. Body rings 11. Tubercles prominent, acute, without tentacles. Supra-orbital spine simple, slender. Coronet elevated, that part of it which connects with the occipital knob, is long, strong, with the anterior profile not concave. The length of the snout is equal to the distance of the anterior margin of the eye from the gill-opening. Snout, head, and body finely marbled and reticulated with brown.

Port Jackson, Port Phillip.

983. HIPPOCAMPUS TRISTIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 197.

Dorsal fin 14. Like the preceding species, but the tail shorter; the shields of the body covered with transverse stripes; the anterior abdominal crest of the body divided into points generally bifid. Dorsal fin with a narrow longitudinal band and the rays marbled. No filaments. (Castlenau.)

Port Phillip.

984. HIPPOCAMPUS ELONGATUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 144.

Dorsal fin with eighteen rays, standing on three body-rings. Body elongate, the broadest ring of the body not being one-fifth wider than the first two; tubercles moderately acute; no tentacles; snout as long as half the head; a short thin ridge in front of the eyes; supra-orbital spine conical, rather long, sharp, and pointed; a single conical and rather notched spine in front of the coronet; this with its terminal five points well marked; eleven body-rings; the part supporting the dorsal fin very little higher than the back. Colour (in a dried state) light greyish yellow, covered with obscure brown irregular marbled spots.

West Australia. Length three inches.

985. HIPPOCAMPUS SUBELONGATUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 145.

Dorsal fin with eighteen rays, standing on three body-rings; body rather elongate, the broadest part not being more than one third wider than the narrowest; snout up to the anterior edge of the eye longer than the other part of the head; tubercles moderately acute; a short thin rather rounded ridge in front of the eyes; supra-orbital spine broad, arched, and rather notched; a single short, blunt, and notched spine in front of the coronet; this rather elevated, directed very obliquely and terminated by five well marked but blunt spines; eleven body-rings. Colour (dried) yellow, with transverse narrow brown bands on the snout.

West Australia. Length four and a half inches.

986. HIPPOCAMPUS TUBERCULATUS, Casteln.

Researches on the Fishes of Australia, p. 48.

All the tubercles, particularly those of the tail, very much developed, the latter ones much thicker at their extremity than at their base. Snout short, being only once and a half the diameter of the eye and considerably shorter than the operculum; hind part of the trunk considerably dilated; the supra-orbital tubercles are long, thick, and bear a short tentacle; all the other tubercles without tentacles; coronet thick, quadrilateral at its extremity; eleven body-rings; thirty-two or thirty-three caudal rings, the last two or three united. Colour dark brown.

Swan River. Length two and a half inches.

ORDER VI. *PLECTOGNATHI.*

Teleosteous Fishes with rough scales or with ossifications of the cutis in the form of scutes or spines; skin sometimes entirely naked. Skeleton incompletely ossified, with the vertebræ in small number. Gills pectinate; a narrow gill-opening in front of the pectoral fins. Mouth narrow; the bones of the upper jaw generally firmly united. A soft dorsal fin, belonging to the caudal portion of the vertebral column, opposite to the anal; sometimes elements of a spinous dorsal besides. Ventral fins none or reduced to spines. Air-bladder without pneumatic duct.

FAMILY I. SCLERODERMI.

Snout somewhat produced; jaws armed with distinct teeth in small number. Skin with scutes or rough. The elements of a spinous dorsal and ventral fins generally present.

Genus TRIACANTHUS, Cuv.

Body compressed, covered with very small or minute rough scales. Tail narrow, prolonged. Teeth in a double series in each jaw, those of the outer series incisor-like, ten in number, those of the inner more rounded, two or four in number. Anterior dorsal fin with three or five small spines behind a very large one. Ventral fin formed by a pair of strong spines joined to the pelvic bone. Vert. 9/10.

Indian and Australian Seas.

987. TRIACANTHUS BIACULEATUS, Bl.

Gunth., Cat. Fishes, VIII., p. 210.—Bleek. Atl. Ichth. Balist., pl. 8, fig. 3.

D. 5/22-25. A. 16-19.

The height of the body is contained from twice and a half to thrice and one-fifth in the total length without caudal fin. Snout produced, with the upper profile distinctly concave. The first dorsal spine as long as the head, and sometimes considerably longer; the second very short not much longer than the third, the fin with or without black spot.

Port Essington, Cape York.

Genus BALISTES, Cuv.

Body compressed, covered with juxtaposed, moveable scutes; some species with series of spines or tubercles on the side of the tail. Upper jaw with a double series of incisor-like teeth, eight in the outer and six in the inner series; lower jaw with eight similar teeth in a single series. The first dorsal fin reduced to three spines, the anterior of which is by far the strongest. Ventral fins reduced to a simple osseous appendage. No barbel. Vertebræ 7/10. Branchiostegals six.

Tropical Seas.

988. BALISTES STELLATUS, Lacep.

Gunth., Cat. Fishes VIII., p. 212.—Bleek., Atl. Ichth. Balist. pl. 1.

D. 3/27. A. 25. L. lat. 44.

Tail depressed behind, with two obtuse ridges on each side. Twenty-four scales in a transverse series running from the origin of the soft dorsal to the vent. A patch of enlarged scales behind the gill-opening. Dorsal and anal fins not elevated; caudal with the posterior margin undulated, and the lobes produced into long filaments in adult specimens. Ventral spine moveable. Adults with but few markings—a whitish band along the middle of the trunk, and dark longitudinal stripes on the dorsal and anal fins. In young examples there are four large white spots on the back—the first between the eye and dorsal spine, the second between the dorsal fins, and the last on the tail. The body besides is ornamented with more or less irregular bluish spots. In very young examples the white dorsal spots are very distinct, the ground colour of the back being a deep brown.

West Australia *(B. phaleratus)*. N. E. Australia.

989. BALISTES ACULEATUS, L.

Gunth., Cat. Fishes VIII., p. 223.—Bleek., Atl. Ichth. Balist., p. 2, fig. 3.

Monacanthus Cheverti, All. & Macl., Proc. Linn. Soc. N.S. Wales, Vol. I., p. 355, pl. 17, fig. 3.

Torres Straits.

990. BALISTES UNDULATUS, Mungo Park.

Trans. Linn. Soc. III., p. 37.—Gunth., Cat. Fishes VIII., p. 226.

D. 3/27. A. 24. L. lat. 41.

Tail with six (? four) strong spines on each side, arranged in a double series. Twenty-four scales in a transverse series, running from the origin of the dorsal fin to the vent. Some small osseous scales behind the gill-opening. Dorsal and anal fins rather low, with rounded profile; caudal sub-truncate. Blackish-brown; head and body with numerous oblique and somewhat undulated yellowish or reddish stripes; two, broader than the others, proceed from the lips, and are confluent posteriorly. The first dorsal fin black, the others orange coloured. The spines on each side of the tail in a black patch.

Cape York (Castelnau).

991. Balistes Garnoti, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 107.

D. 3/22. A. 19.

Form short and high, the height of the body being half the total length; the length of the head is twice and eight-tenths in the same, and the diameter of the eye is three times in the length of the head. The profile of the head is straight, very little concave, the first dorsal spine is strong and straight, rough with small spines; the second dorsal fin is high and triangular; anal similar. Colour light yellowish-brown, darker on the back, with faint traces of annulated spots; the second dorsal fin is also faintly spotted. There are one or two irregular blotches at the base of the anal fin. On each side of the body there is a faint brown line, which is divided about the middle into two, one running to the posterior edge of the dorsal fin, the other to the anal. Fins yellow.

Knob Island (Torres Straits).

Genus Monacanthus, Cuv.

Body compressed, covered with very small or minute rough scales; adult males of some of the species with a peculiar armature on the side of the tail, which in females is much less developed or entirely absent. Upper jaw with a double series of incisor-like teeth, six in the outer, and four in the inner series; lower jaw with six similar teeth in a single series. The first dorsal fin reduced to a single strong spine, behind which generally another rudimentary spine. Ventral fins reduced to a simple osseous fixed or moveable small appendage, which is sometimes rudimentary or entirely absent. No barbel. Vertebræ 7/11-14.

Tropical and Sub-tropical Seas.

1. *Anal fin with less then forty rays.*

A. Dorsal spine with four series of barbs.

992. MONACANTHUS HIPPOCREPIS, Quoy & Gaim.

Gunth., Cat Fishes, VIII., p. 246.—Casteln. Proc. Linn. Soc., N. S. Wales, Vol. III., p. 399.

Aleuterius variabilis, Richards. Voy. Erebus and Terror, p. 67, pl. 53, fig. 1.

Described in Proc. Linn. Soc., N.S. Wales, loc. cit.

Port Jackson, South Australia.

993. MONACANTHUS GUNNII, Gunth.

Gunth., Cat. Fishes VIII., p. 247.

D. 34. A. 33.

Skin velvety, without distinct scales. Body somewhat elevated, its depth being a little more than half the total length without caudal fin. Snout rather produced, with the upper profile very slightly concave. Gill-opening much advanced, its greater portion being in front of the eye; pectoral fin below the middle of the orbit. Dorsal spine strong, above the middle of the orbit, with a double row of barbs in front and behind, the anterior rows being much closer together than the posterior. Caudal fin rounded; dorsal and anal fins low. Ventral spine small, fixed, with spikes pointing forwards and backwards. Dark brown, mottled with black.

Tasmania. Length eleven inches.

994. MONACANTHUS CONVEXIROSTRIS, Gunth.

Gunth., Cat. Fishes VIII., p. 248.

D. 34-37. A. 32-35.

Body covered with small spiny but very distinct scales, without cutaneous filaments. Body rather oblong, its depth being about two-fifths of the length without the caudal fin. Snout rather produced, *with the upper profile convex.* Gill-opening much advanced, partly in front of the vertical from the anterior margin of the eye; pectoral fin below the middle of the orbit. Dorsal spine situated above the hinder half of the eye, rather strong, but much shorter than the head, armed in front with a double series of barbs, which are closely set and smaller than those behind. Caudal fin rounded, shorter than the head; dorsal and anal fins low. Ventral spine small, fixed, prominent, with barbs. Coloration uniform greyish, or clouded with darker. Length nine inches.

Tasmania, Port Jackson. (Castelnau.)

995. MONACANTHUS MULTIRADIATUS, Gunth.

Gunth., Cat. Fishes VIII., p. 248.

D. 38. A. 36.

Body covered with minute rough scales, with short bristles on the side of the tail, which in adult examples is armed with three pairs of strong spines pointing forwards. Body oblong, its depth being contained twice and three-fourths in the length exclusive of the caudal fin. Snout produced, with the upper profile convex. Gill-opening situated below the hind margin of the orbit, the pectoral fin being entirely behind the vertical from the eye. Dorsal spine compressed in the direction of the longitudinal axis of the body, armed laterally with a row of barbs, and in front with a double series of small very closely set barbs; it is smooth behind, rather feeble, and situated above the hinder part of the orbit. Caudal fin truncate; dorsal and anal fins low. Ventral spine very small, rough, free from the abdominal flap. Coloration uniform brownish grey; the base of the caudal spines of the hind margin of the caudal fin light-coloured.

South Australia. Length eighteen inches.

996. MONACANTHUS TRACHYLEPIS, Gunth.

Gunth., Cat. Fishes VIII., p. 248.

D. 39. A. 35.

Scales not distinct, replaced by short vertical prominences, each of which bears from three to five spinelets. Tail with two pairs of strong compressed spines bent forwards. Body oblong, its depth being contained twice and two-thirds in the length without the caudal fin. Snout produced, with the upper profile straight. Gill-opening below the hinder half of the orbit; pectoral fin behind the vertical from the hind margin of the orbit. Dorsal spine strong, very long, nearly as long as the head, situated above the posterior half of the orbit; it is armed behind with a double series of very small barbs, and there is also a double series of minute barbs in the median line of the anterior surface of the spine. Caudal fin rounded, short; dorsal and anal fins low. Ventral spines very small, fixed, with very short spikes radiating from its centre. Colour blackish-brown; the dorsal and anal fins yellow, the tail orange; blue spots along the base of the dorsal, anal, and caudal fins.

Broken Bay. Length fourteen inches.

997. MONACANTHUS PERONII, Hollard.

Ann. des Sc. Nat. 1854, Vol. II., p. 356, pl. 13, fig. 4.

D. 35. A. 34. P. 12.

Rather elongate, profile straight or with an almost imperceptible concavity; back slightly concave between the two dorsal fins; the dorsal spine is short, straight with short spines on all the angles; the ventral spine is prominent, covered with spinules, and is immediately in front of a marked abdominal concavity. The scales are spine-like with swollen tips. The colour is a pale brown, with darker brown spots on the body, disposed in rather irregular series; two or more narrow brown bars across the caudal fin.

Australia (Hollard).

The Fish described by Dr. Gunther (Cat. VIII., p. 240) as *M. Peronii*, Hollard, cannot be that species. I believe that Count Castelnau has also made a similar mistake in the Proceedings of the Linnean Society of N. S. Wales, Vol. III., 398, and given this name to a species distinct not only from Hollard's but also from Dr. Gunther's.

998. MONACANTHUS GUNTHERI,

Monacanthus Peronii, Gunth., Cat. Fishes VIII., p. 249.

D. 33-35. A. 33.

Body covered with papillæ, each with a round expansion at the top, like a mushroom; in examples exposed to the air for some time they shrink, assuming the appearance of a spine. Adult males with a band of long stiff slender spines on each side of the tail between the dorsal and anal fins, like a tooth-brush. Body oblong, its depth being contained twice and one-third in the total length (without caudal fin). Snout produced with the upper profile very slightly concave; base of the pectoral fin below the hinder part of the eye. Dorsal spine straight, four-edged, each edge with a series of barbs, the anterior barbs being stronger than the posterior; the spine is inserted above the middle of the orbit, and is not more than one-half of the length of the head. Caudal fin rounded; dorsal and anal fins low. Ventral spine very short, fixed. Brown, with small darker brown spots. Length ten inches.

Tasmania, Port Phillip, Port Jackson.

999. MONACANTHUS BROWNII, Richards.

Voy. Erebus and Terror, p. 68.—Gunth. Cat. Fishes, VIII., p. 249.

D. 32-33. A. 30-31.

Skin minutely granular. Adult specimens with the sides of the tail covered with short, fine, setiform bristles, and with two pairs of strong straight conical spines. Body oblong, its depth being one-third of the length, exclusive of caudal fin. Snout produced, with the upper profile convex. Dorsal spine of moderate strength, straight, much shorter than the snout; four-edged, each edge with a series of barbs. Caudal fin rounded; dorsal and anal fins low. Ventral spine none; abdominal edge trenchant. Green with blue dots over the whole body; the spots are replaced by blue oblique and longitudinal lines on the side of the head and anterior part of the trunk. The part of the tail which is armed with bristles and spines is of an orange colour. Fins green. Length twelve inches.

Coasts of Australia.

1000. MONACANTHUS SPILOMELANURUS, Quoy & Gaim.

Gunth., Cat. Fishes VIII., p. 250.

M. paragaudatus, Richards., Voy. Erebus and Terror, p. 66, pl. 39, figs. 1-4.

D. 30-32. A. 28-32.

Skin minutely granular. Adult males with a tooth-brush-lik cluster of setiform spines on the side of the tail between the dorsal and anal fins. Body oblong, its depth being about one-third of the length with caudal fin. Snout long, pointed, the upper profile being much more oblique than the lower. Dorsal spine of moderate strength, rather short, straight, four-edged, each edge with a series of barbs; the spine is inserted above the hinder part of the orbit. Caudal fin rounded; dorsal and anal fins of moderate height. Ventral spine very small, in young examples absent. Brownish, with brown and light dots about the head and body; side of the body with dark undulated lines. Young examples with a narrow light line edged with black above and below, from the snout through the lower part of the eye along the middle of the side; a brown line runs from one eye round the forehead to the other. Caudal fin with a vertical intramarginal black band, which disappears in old examples.

Tasmania, South Australia, Port Jackson. Length eight inches.

1001. MONACANTHUS MACULOSUS, Richards.

Voy. Erebus and Terror, p. 67, pl. 39, figs. 5-7.—Hollard, Ann. Sc. Nat. 1854, II., p. 359, pl. 14, fig. 1.

D. 29-33. A. 29-30. P. 12.

Of rather elongate form, the height of the body being one-third of the total length. Snout long, very slightly concave above. Dorsal spine rather longer than in *M. spilomelanurus* with four rows of barbs, it is placed behind the orbit. The ventral spine is very small and very feebly armed; caudal fin long, rather pointed. Colour brownish with a number of small darker spots; the caudal fin with a brown cross-bar at its base, and sometimes near the extremity also. Length five inches.

Tasmania, Port Jackson.

1002. MONACANTHUS CASTELNAUI.

M. Peronii, Casteln. Proc. Linn. Soc. N.S. Wales, Vol. III., p. 398.

Port Jackson.

1003. Monacanthus Freycineti, Hollard.

Ann. des Sc. Nat. 1854, Vol. II., p. 336, pl. 12, fig. 3.

D. 36. A. 35. P. 13.

The profile of the head and snout is almost straight, and at an angle of 40°, or more; the muzzle is very obtuse and the back between the fins horizontal. The dorsal spine is very long, with four rows of barbs and is a little flattened, the second ray or spine attached to the first by a membrane, is much larger than usual, and resembles a *Balistes*. The soft dorsal and anal fins are considerably lower posteriorly than in front. The ventral spine terminates in a prominent spinous plate, the abdominal outline behind it extending some distance before the commencement of the anal fin. On each side of the tail there are six or seven strong spines placed in two rows, and pointing backwards. The colour is uniform and of a darkish hue, in most preserved specimens, but one shows traces of lines or streaks on the body, the spines on the tail are generally black on the point, and the portion of the tail on which they are situated is of a lightish hue.

New South Wales.

1004. Monacanthus platifrons, Hollard.

Ann. des Sc. Nat. 1854, Vol. II., p. 341.

D. 33.? A. 31.? P. 12.

Form thick and rather elongate, the profile of the head a little convex, at an angle of 30°; the forehead is very broad and flat between the eyes, and the muzzle is rounded. The dorsal spine is straight and rather short, with four rows of barbs; it is placed above the hinder half of the eye which is very large. The ventral spine is not prominent and has at its extremity a small spinous plate. The soft dorsal and anal fins are wanting, or much injured, in the only specimen known. The scales of the body each bear from one to four straight slender spinules, smallest at their extremity. The colour seems to be uniform, and of a blackish-gray.

King George's Sound.

1005. MONACANTHUS FORSTERI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 204.

D. 34. A. 27. P. 13. C. 12. V. none.

The profile in front of the dorsal spine is concave, behind it convex. The body is rather elongate, the height being contained twice and one-third in the total length; the snout from its extremity to the orbit is four times and one-third in the same; the lower profile is more convex than the upper. The dorsal spine is slender, short, and straight, its length is contained once and one-fifth in the transverse diameter of the eye; it is placed over the centre of the eye, and is compressed, quadrangular and armed with short barbs. No ventral spine; caudal fin long; the skin is covered with very minute granulations, which become spinous on the tail. The four large anterior teeth are almost square. Colour dark green on the upper parts of the body, white beneath, with irregular dark spots most numerous on the sides. Fins light green.

Port Phillip. Length three inches.

1006. MONACANTHUS PRASINUS, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 205.

D. 35. A. 34. P. 13.

Profile straight. The dorsal spine is inserted over the posterior third of the eye, is arched and armed with four rows of strong spines directed downwards, those in the posterior row largest. The spine is very strong, and its length is twice and a quarter the diameter of the orbit; there is a second spine, which is one-third of the length of the first. The ventral spine is fixed and formed of a small nest of spinelets, three of which, on each side, are much larger than the others and curved. The height of the body, when the pubic bone is extended, is twice and two-thirds the total length. The two front teeth are triangular, and by their junction form a pointed edge, the other teeth are also pointed. The skin is covered with very fine velvety granulations. The colour is bright green, silvery on the belly; the second dorsal and anal fins transparent, rather darker on the margin.

Port Phillip, Port Jackson. Length two and a half inches.

1007. MONACANTHUS BAUDINI, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 55.

D. 35. A. 31. P. 13. C. 8.

Body covered with indistinct scales of a lozenge form, each with three or four spinelets. Snout very long, profile straight. The distance from the snout to the orbit is one-fourth of the total length. Teeth very large, the upper ones conical, and the lower strongly and obliquely emarginate and forming a strong external point. The ventral spine is very small and fixed, its spinelets very small. The dorsal spine is situated over the posterior part of the eye, it is slender and straight and its length is one-sixth of the total length; it has four series of barbs, the anterior two smaller and closer together than the posterior. The caudal fin is rounded, the soft dorsal and anal fins are high. Coloration not mentioned.

Victoria, Tasmania. Length ten inches.

1008. MONACANTHUS LESUEURII, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 56.

D. 34. A. 33. P. 15.

The body is oblong, with the upper profile of the head very concave. The skin is covered with very minute and smooth scales, those of the head and some parts of the body more granulose. Snout thick, much rounded above, its length to the orbit is one-fourth of the total length. Teeth moderate, almost square, with the two upper front ones larger and shaped obliquely into a point. Ventral spine of moderate size, rounded, and surrounded by a crown of very short spines; it does not appear moveable. The dorsal spine is thick, straight, as long as the snout, and inserted over the centre of the orbit, which is placed obliquely; there are on it four rows of strong and equi-distant barbs. The caudal fin is rather long, the soft dorsal and anal fin low. Colour dark brown, fins pinkish or of a paler colour.

Western Port. Length four inches.

1009. MONACANTHUS MARGARITIFER, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p 80.

Syn. *M. perulifer*, and *obscurus (olim brunneus)* Castelnau, and *M. Damellii*, Gunth.

D. 30. A. 28.

The entire head and body coarsely granular, each granule terminating in a spine. Tail not armed. The depth of the body is more than half the length (caudal fin excluded). Snout rather produced with the upper profile slightly concave. Gill-opening below the middle, root of the pectoral fin below the posterior half of the eye. Dorsal spine above the middle of the eye, long, as long as the distance from the gill-opening to the snout, armed with four series of barbs, of which the anterior are smaller and closer together than the posterior. Caudal fin rounded; dorsal and anal fins low. Ventral spine short, fixed, with very short spikes. Colour uniform blackish-grey. Length six inches.

West Australia, South Australia, Port Jackson.

1010. MONACANTHUS VITTIGER, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 81.

D. 30. A. 30. P. 13. C. 12.

The height of the body is contained twice and two thirds in the total length; the length of the head about three times in the same; the diameter of the eye is contained once and two-thirds in the length of the snout. Form rather elongate; the body is covered with minute mushroom-shaped granulations. The ventral spine is formed of a little bunch of spinules; the dorsal spine is inserted a little behind the centre of the orbit, and a little in front of the insertion of the pectorals; its height is about equal to half that of the body; it is straight, four-edged, and terminates in a small filament; the anterior barbs are strong, directed downwards; the posterior are more feeble and closer together than the anterior. The caudal fin is rather long. Colour light green, white on the belly, an irregular, broad band extends on each side from the snout to the tail; the first dorsal fin is green, the second and the anal and pectorals are white and transparent. Length under two inches.

South Australia.

1011. MONACANTHUS YAGOI, Casteln.

Proc Linn. Soc. N.S. Wales, Vol. II., p. 245.

St. Vincent's Gulf. Length ten and a half inches.

1012. MONACANTHUS SANTI-JOANNI, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 246.

Hobson's Bay. Length ten to twelve inches.

1013. MONACANTHUS GUTTULATUS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 37, pl. 4, fig. 2.

King George's Sound.

1014. MONACANTHUS MELAS, Gunth.

Ann. and Mag. Nat. Hist., 1876, Vol. XVII., p. 402.

D. 34. A. 34.

Skin velvety, without distinct scales. Shape oblong, the height of the body being a little less than one-third of its length (without caudal), or two-sevenths of the total length. Snout long, the distance of the eye from its end being contained thrice and four-fifths in the length of the body; upper profile very convex. Gill-opening below and partly in advance of the eye. Root of the pectoral fin beneath the hinder part of the orbit. Dorsal spine long and slender, situated above the hinder part of the eye, its length being contained once and a half in the depth of the body and in the length of the head; four rows of very small barbs, the two anterior close together, all being rather indistinct. Caudal fin with the margin rounded. Dorsal and anal fins higher anteriorly than posteriorly. Ventral spine small, fixed. Colour brownish-black, with two whitish bands across the chin. Dorsal spine and caudal fin black; the other fins light-coloured.

Tasmania. Length fourteen inches.

B. Dorsal spine with two series of barbs.

1015. MONACANTHUS CHINENSIS, Bl.

Gunth., Cat. Fishes VIII., p. 236.—Bleek. Atl. Ichth. Balist., p. 125, pl. 222, fig. 2.

Syn. *M. geographicus*, Cuv. & Casteln. Res. Fishes of Aust., p. 50.

D. 28. A. 28-29. Vert. 7/11.

Scales exceedingly small and rough, each with a median crest which sometimes terminates in a spine. On each side of the tail six spines directed forwards and disposed in two rows; they are scarcely visible in young specimens or females. Body elevated, its depth being contained from once and a half to once and three-fourths in the length without caudal fin; the upper profile rises from the dorsal spine to the origin of the soft dorsal fin, which is the highest part of the back. Snout pointed, with the upper profile concave. Dorsal spine strong, shorter than the head, inserted above the posterior half of the eye, and armed behind with a double series of strong recurved spines. Caudal fin rounded, rather shorter than the head; old males with the upper caudal ray slightly produced. Ventral spine moveable, tapering, without spinelets, attached to the cutaneous ventral expansion, which is much developed, extending beyond the spine. Dorsal and anal fins moderately elevated, the sixth or seventh rays being the longest, about half as long as the head. Brownish, irregularly marbled with blackish, and the whole body or part of it with numerous small brown spots. Vertical fins crossed by series of small black dots or lines.

North-west Coast of Australia.

1016. MONACANTHUS MEGALURUS, Richards.

Gunth., Cat. Fishes VIII., p. 237.—Casteln. Proc. Linn. Soc. N.S. Wales, Vol. III., p. 398.

M. Chinensis, Richards. Voy. Erebus and Terror, p. 64, pl. 40, figs. 3-4.

D. 32. A. 31.

The description of the previous species, *M. chinensis* applies in every particular to the present species excepting that the scales are larger and the dorsal spine more slender. The coloration is given by Count Castelnau in Vol. III., of our Proceedings *(loc. cit.)*

Port Jackson, Freycinet's Harbour.

1017. MONACANTHUS TOMENTOSUS, L.

Gunth., Cat. Fishes VIII., p. 238.—Bleek., Atl. Ichth. Balist., p. 127, pl. 220, fig. 1.

D. 27-29. A. 25-27.

Scales exceedingly small, each with four or five spines on the margin; on each side of the tail an oblong patch of short setiform spines, well developed in adult males, but very small or entirely absent in females and young. Body sometimes with scattered, short filaments. Body elevated, its depth being one-half or two-thirds of the length without the caudal fin. Snout pointed, with the upper profile concave. Dorsal spine very strong, about as long as the head, situated above the eye rather behind the middle, and armed behind with a double series of strong recurved spines. Caudal fin rounded; dorsal and anal fins low. Ventral spine moveable; armed with curved spinelets on the side, separated from the ventral rays. Brown, marbled with blackish; an indistinct whitish longitudinal band on the side of the trunk, behind the gill-opening. Caudal fin with two blackish cross-bands.

Australia (Gunther), Endeavour River (young, Macl. Mus.)

1018. MONACANTHUS SULCATUS, Hollard.

Ann. Sc. Nat. 1854, II., p. 363, pl. 14, f. 3.—Gunth., Cat. Fishes VIII., p. 239.

D. 29-32. A 31-33.

Scales minute, spiny, each with a keel, the keels confluent, forming parallel longitudinal raised lines. Body rather elevated, its depth being a little more than one-half the length without caudal fin. The dorsal profile between the dorsal fins somewhat oblique, the commencement of the second dorsal being the highest point. Snout slightly pointed, with the upper profile nearly straight. Dorsal spine of moderate strength, tapering, shorter than the head, situated above the posterior part of the orbit and armed with two series of barbs behind. Caudal fin rounded, sometimes with the upper ray produced into a short filament; dorsal and anal fins of moderate height. Ventral spine moveable, tapering, rough, free from and extending beyond the ventral flap. Brown, irregularly marbled with darker; sometimes a roundish blackish blotch below the anterior third of the dorsal fin.

Australia. (McGillivray.) Length three and a half inches.

1019. MONACANTHUS GRANULATUS, White.

Richards. Voy. Erebus and Terror, p. 63, pl. 40, figs. 1-2.

M. granulosus, Gunth., Cat. Fishes, VIII., p. 243.

D. 30. A. 28-29. Vert. 7/11.

Body covered with papillæ, each with a round expansion at the top, like a mushroom; in dried examples they shrink, assuming the appearance of a short spine. Body rather oblong, its depth being nearly one-half of the total length (without caudal). Snout moderately produced, with the upper profile slightly concave. Dorsal spine strong, barbed behind, but not in front, rather shorter than the head and situated above the posterior part of the orbit. Caudal fin rounded, of moderate length; dorsal and anal fins low. Ventral spine very short, not moveable. Brownish grey, marbled with dark brown, with the papillæ white; fins olive yellow sprinkled with brown; generally two large dark spots on the belly at the base of the anal fin.

Port Jackson. Length nine inches.

1020. MONACANTHUS RUDIS, Richards.

Voy. Erebus and Terror, p. 65, pl. 40, f. 7-8.—Gunth., Cat. Fishes VIII., p. 244.

D. 34-35. A. 34.

Body covered with minute, rough, but distinct scales. Body oblong, its depth being two-fifths of the length without the caudal fin. Pectoral fin situated behind the vertical from the orbit. Snout long, with the upper profile convex. Dorsal spine inserted above the posterior half of the orbit, of moderate strength, two-thirds as long as the head, armed with a double series of small barbs behind, rough in front. Caudal fin rounded; dorsal and anal fins low. Ventral spine very small, fixed. Brown, uniform or with four indistinct, broad, whitish longitudinal bands. Caudal fin with a broad blackish margin.

Tasmania, Port Jackson. Length nine inches.

1021. MONACANTHUS AYRAUDI, Quoy & Gaim.

Voy. Uran. Zool. p. 216, pl. 47, f. 2.—Gunth., Cat. Fishes VIII., p. 244.

Syn. *M. vittatus*, Richards., and *Frauenfeldii*, Kner.

D. 32. A. 31.

Skin rough, velvety. Body elongate, its depth being rather less than one-third of the total length without caudal fin. Pectoral fin situated below the hinder half of the orbit, immediately in front of the vertical from the dorsal spine. Snout very long, rather obtuse, with the upper profile a little convex. Dorsal spine rather feeble, compressed in the direction of the longitudinal axis of the body, armed with a single lateral series of barbs. Caudal fin sub-truncate, the upper lobe slightly produced in old examples; dorsal and anal fins elevated in front. Ventral spine very small, fixed. Brownish, with two or four whitish longitudinal bands, the middle one broad and more distinct than the outer, in old specimens the colour is uniform.

Port Jackson. Length eighteen inches.

This species of Leather Jacket is very abundant on the Schnapper Grounds outside of Port Jackson, and is very destructive to the fishermens' lines.

1022. MONACANTHUS EDELENSIS, Casteln.

Researches on the Fishes of Australia, p. 50.

D. 33. A. 31.

General form elongate, the height of the body being twice and a half in the length without the caudal fin. Snout produced, the upper profile straight or very little concave; skin entirely velvety; no spines on the tail; caudal fin rounded; ventral spine small, fixed, with its spinlets directed backwards. A perpendicular line drawn from the base of the dorsal spine to that of the pectoral fin would go through the centre of the eye. Dorsal spine long, straight, with a double series of strong spines directed downwards on its posterior part, and very faint traces of a similar double series, as far distant, on the anterior face. Colour dark brown, beneath lighter; fins light, probably rosy in life.

Swan River. Length seven and a quarter inches.

1023. MONACANTHUS BRUNNEUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 108.

D. 35. A. 27. P. 15. C. 7.

Body rather elongate, entirely covered with very fine spines which give it a velvety appearance. The height of the body is contained twice and one-third in the total length, the length of the head three times and two-thirds in the same; the diameter of the eye is one-third of the length of the head. Snout rather concave above; the space between the dorsal fins is convex. The dorsal spine is stout, inserted over the first third of the orbit, covered with fine closely set tubercles, and has on its posterior edge two series of short, thick, conical spines, which towards the base extend to the middle of the breadth of the spine; the second is very visible. Caudal fin rounded; the anal begins behind the second dorsal, and both fins are highest at one-fourth of their length. The ventral spine is formed of a small knob of spinules, with a few longer ones on the sides, and four still longer ones directed obliquely, two forwards and two backwards. Colour chocolate-brown, with the posterior margin of the caudal fin white, the dorsal and anal fins pink, and the pectorals of a light brown. Length three and a half inches.

Knob Island (Torres Straits).

C. Dorsal spine with irregularly arranged barbs and filaments.

1024. MONACANTHUS PENICILLIGERUS, Cuv.

Gunth., Cat. Fishes VIII., p. 245.—Bleek. Atl. Ichth. Balist., p. 129, pl. 221, fig. 3.

D. 26. A. 24.

Body covered with compressed, three-rooted spines, forming irregular longitudinal series. Fringed fleshy filaments on the dorsal and ventral spines, head and body. Body elevated, its greatest depth being contained from once and one-sixth to once and a half in the length without the caudal fin. The origin of the soft dorsal fin is level with, or but little raised above, the base of the dorsal spine. Snout with the upper profile straight or but little concave. Dorsal spine of moderate strength and length, with spinelets irregularly arranged; it is inserted immediately behind the orbit. Caudal fin more or less elongate, especially in old examples. Ventral spine fixed, spiny, projecting beyond the abdominal membrane. Dorsal and anal fins of moderate height. Brownish, irregularly marbled with darker; a round black spot in the middle of the side; some straight black lines along the body and tail. Vertical fins with numerous black dots.

Cape York, Queensland, Freycinet's Harbour.

D. Dorsal spine without barbs.

1025. MONACANTHUS TROSSULUS, Richards.

Voy. Erebus and Terror, p. 68, pl. 40, f. 5-6.—Gunth., Cat. Fishes VIII., p. 234.

D. (25) 28. A. (23) 26.

Skin densely covered with slender, flexible, acute bristles, which are so delicate as to give a velvety feel to the finger. Body elevated; the height from the second dorsal fin (the highest point) to the point of the pelvic bone is equal to the length without caudal fin. Snout obtuse with the upper profile nearly straight. The dorsal spine stands over the middle of the orbit, and is roundish, much shorter than the head, and densely covered with minute grains, which lengthen into very fine acicular bristles. No ventral spine. Dorsal and anal fins low. Blackish green, with some minute darker specks and dots of a pale colour scattered over the body, and most crowded on the face and flanks. Along the pelvic bone and near the abdomen the dots run into streaks.

West Australia, Victoria, Port Jackson.

1026. MONACANTHUS OCULATUS, Gunth.

Gunth., Cat. Fishes, VIII., p. 235.

D. 24. A. 22.

Skin densely covered with minute bristles, producing a velvety appearance. Outline of the body subcircular, its depth being contained once and one-third in the length without the caudal fin. No pelvic protuberance. Snout very obtuse, not projecting. The dorsal spine is rather stout but short, placed behind the eye and about as long as the orbit; it has no barbs. Dorsal and anal fins of moderate height. Olive-coloured (in spirits) with about nine rather irregular longitudinal rows of purplish ocelli edged with white, and about as large as the pupil of the eye.

South Australia, Port Jackson. Length one and a half inch.

1027. MONACANTHUS BAUERI, Richards.

Voy. Erebus and Terror, p. 68.

D. 26-27. A. 21. C. 9. P. 6-7.

Form inflated as in *Tetrodon*. Snout short and slender. Belly rounded and prominent without any ventral spine. The dorsal fin stands over the orbit, and has the usual triangular slip of membrane behind it. The second dorsal and anal fins are highest anteriorly, but with rounded summits and terminating close to the caudal fin, which is rounded. Skin densely clothed with hair-like spines. Colour bright grass-green, with seven interrupted dark brown longitudinal stripes; nine short bars radiate from the orbit, and on the belly and flanks beneath the stripes are many white specks. The rays of the caudal fin are grass-green, spotted in cross-rows with umber-brown; the pectorals have a neutral tint; the dorsal and anal are yellow, with three rows of black specks between the bases of the rays, and four rows of pale specks disposed in pairs between the tips of the rays.

Coasts of Australia. Length four inches.

Only known from a drawing by Mr. Ferdinand Bauer in Dr. Brown's possession.

1028. Monacanthus distortus, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 146.

D. 27-28. A. 27-28. P. 10. C. 15.

The upper profile of the head straight and oblique up to the dorsal spine, behind this a large gap or emargination, and behind this the back is very elevated and gibbous; the lower profile is developed into a large rounded ventral pouch, without ventral spine, behind the ventral pouch there is a large gap or emargination similar and opposite to that on the back. The height of the body at the dorsal spine is nine-tenths of the total length, the height a little further back at the depression, is two-thirds of the same; the eye is nearly as long as the muzzle. The dorsal spine is slender, arched, pointed, covered with short spinous bristles. and inserted over the posterior third of the eye. The skin is entirely covered with very short spines, which become longer and more slender on the tail. Colour brown with the fins yellow.

West Australia. Length two and a half inches.

2. *Anal fin with forty or more rays.*

1029. Monacanthus macrurus, *n. sp.*

D. 42. A. 46. C. 8. P. 14.

Body elongate; the height about one-sixth of the total length. Snout very long, about six times the diameter of the eye in length. Profile above concave, the mouth opening upwards, with three triangular very acutely pointed incisors in each jaw, and with the chin round, prominent and extending beyond the mouth. Dorsal spine short, the length less than the diameter of the orbit, irregularly and densely covered with spinelets, and situated over the posterior third of the orbit; there are two minute rays behind it in the usual membrane. No ventral spine; caudal fin of very strong rays, of pointed form, the middle rays very long, nearly one-third of the total length. Skin velvety with very minute spines. Colour in spirits brownish-grey, indistinctly marked with spots and bars, most conspicuous on the tail; in fresh specimens the ornamentation is most elaborate.

Port Jackson. Length seven inches.

Genus ANACANTHUS, Gray.

Body compressed, elongate, covered with minute asperities. Dentition as in *Monacanthus*. The first dorsal fin reduced to a single feeble spine. Ventral fins none. Lower jaw with a fleshy barbel. Vertebræ 20-30.

East Indian Archipelago, Australia.

1030. ANACANTHUS BARBATUS, Gray.

Gunth., Cat. Fishes, VIII., p. 255.—Bleek., Atl. Ichth. Balist., pl. 5, t. 226.

D. 44-51. A. 59-65.

The height of the body is two-fifths of the length of the head, which is two-fifths of the total length without the caudal fin. Caudal fin very elongate, longer than the head. Dorsal spine very feeble, setiform, above the hind margin of the orbit.

West Australia. (Macl. Mus.)

Genus OSTRACION, Artedi.

The integuments of the body are modified into a carapace composed of juxtaposed hexagonal osseous scutes, the snout, bases of the fins, and hind part of the tail being covered by soft skin. Mouth small, maxillary and inter-maxillary bones coalescent, each jaw with a single series of small slender teeth. One short dorsal fin (without spine) opposite to the short anal. Ventral fins none. Vertebræ fourteen, the five last extremely short, the anterior sub-elongate; ribs none.

Tropical and Sub-tropical Seas.

A. *Carapace closed behind the anal fin.*

1031. OSTRACION CONCATENATUS, Bl.

Gunth., Cat. Fishes VIII., p. 259.

Carapace three-ridged, forming a broad continuous bridge across the back of the tail. Dorsal ridge with two compressed small spines placed close together, each ventral ridge with two similar spines remote from each other. Supra-orbital edge with a very small or minute spine, pointing backwards and outwards; it is frequently absent, sometimes double. All these spines become less prominent with age, and only traces of them can be discovered in full grown specimens (eight to ten inches). Inter-orbital space concave. Adults with some horizontal dark stripes on the cheek.

Port Jackson.

1032. OSTRACION CUBICUS, Lin.

Gunth., Cat. Fishes, VIII., p. 260. (Many synonyms.)

Carapace four-ridged, without spines, forming a broad continuous ridge across the back of the tail. Ridges rather blunt. Back slightly convex, without raised ridge in the median line. Inter-orbital space concave. Snout with a hump immediately above the mouth, in very old examples. Body with bluish black-edged ocelli, not more than one on a scute; but frequently the ocelli are absent on the abdomen or head, or on a portion of the sides or back. Head, sides, and abdomen frequently with black dots. Tail immaculate, or with black, never with white, dots. *Young* with scattered large black dots.

Port Darwin, Fair Cape. (Chevert Exp.) Length fifteen inches.

1033. OSTRACION RHINORHYNCHUS, Bleek.

Atl. Ichth. Ostrac., p. 37, pl. 1 & 3.—Gunth., Cat. Fishes, VIII., p. 263.

Carapace four-ridged, without spines, forming a continuous bridge across back of the tail. The median line of the back is distinctly raised. Inter-orbital space very slightly concave. Snout with a hump, which in adults is but little below the level of the forehead. Back and tail, and sometimes the sides with numerous small brown dots (2-10 on one scute). Abdomen immaculate.

North-west Australia. (Duboulay.)

1034. OSTRACION DIAPHANUS, Bl.

Gunth., Cat. Fishes VIII., p. 264.—Hollard, Ann. Sc. Nat. 1857, VII., p. 157.

Acanthostracion cornutus, Bleek., Atl. Ichth., Ostrac., pl. 2 and 4.

Carapace four-ridged; the broad bridge across the back of the tail is formed by four transverse series of scutes. A pair of short conical spines *divergent*, and pointing forwards in front of the orbits. A triangular compressed spine in the middle of the back; generally a small spine on each dorsal ridge, opposite to the central spine. Ventral ridge terminating behind in a strong flat spine, and frequently with two other smaller spines on the side. Interorbital space deeply concave. Caudal fin of moderate length. Sometimes of uniform coloration, sometimes with bluish, sometimes with black spots.

Port Jackson.

1035. Ostracion cornutus, Linn.

Gunth., Cat. Fishes, VIII., p. 265.—Hollard, Ann. Sc. Nat. 1857, VII., p. 158.

Carapace four-ridged, forming a broad bridge across the back of the tail. A long conical spine above each orbit, pointing forwards. Each ventral ridge terminates behind in a similar long spine pointing backwards. Each dorsal ridge with a slight prominence in the middle of its length, but it is not developed into a spine. Median line of the back slightly raised, without spine. Inter-orbital space deeply concave. Caudal fin very long in adults, with simply bifid rays. Carapace and tail with round bluish and blackish spots in moderate number, of the size of the pupil of the eye.

Port Jackson, Endeavour River. Length fourteen inches.

B. *Carapace not closed behind the anal fin.* (*Aracana*, Gray).

1036. Ostracion auritus, Shaw.

Richards., Trans. Zool. Soc., III., p. 160, pl. 9.—Gunth., Cat. Fishes, VIII., p. 266.

Back without, abdomen with a crest. Spines: one above the hind part of the orbit pointing backwards; two on each side of the back, rather close together; one in the middle of the side; and two or three on each side of the abdomen. Anterior profile of the snout without hump. Head and body with longitudinal, more or less undulated brown (silver or golden) stripes, much narrower than the interspaces; there are four of them on each cheek. In old preserved specimens the ornamental colours disappear, the entire fish being of almost uniform coloration.

Tasmania, South Australia. Length six inches.

1037. Ostracion ornatus, Gray.

Richards., Trans. Zool. Soc., III., p. 164-5, pl. 10—11.—Gunth. Cat. Fishes VIII., p. 267.

Back without, abdomen with a crest. Spines: one above the middle of the orbit, nearly erect, pointing upwards and outward; two on each side of the back; one in the middle of the side; two on each side of the abdomen, the foremost being well developed, and situated immediately behind the root of the pectoral fin. Snout in adults with a more or less developed hump. Head and body with numerous alternate brown and yellow longitudinal stripes; the brown are broader than the yellow, there are about seven on each side of the head. The stripes on the body are sometimes broken up into small spots.

Tasmania, South Australia. Length five inches.

1038. OSTRACION LENTICULARIS, Richards.

Proc. Zool. Soc., 1841, p. 21.—Gunth., Cat. Fishes, VIII., p. 268.

Carapace much compressed, back and abdomen compressed into a crest; no spines, sometimes the centre of each scute slightly raised. Colour pink with yellow tints, on the sides and back some spots of an ochreous yellow, having the centre darker; lower parts of the body and mouth of a rose colour, becoming darker towards their extremities. Length twelve inches.

Port Jackson, South Australia.

1039. OSTRACION AMÆNUS, Casteln.

Aracana amæna, Casteln. Proc. Zool. Soc. Victoria, Vol. I., p. 207.

Carapace with five ridges, the abdomen forming an inferior one; spines short, thick, conical, blunt, not arched, placed one above the orbit, pointing outwards; two on each side of the back, pointing backwards; beneath these are others still shorter and which are merely white striated tubercles, these are placed, one on each side towards the middle, and three on a line at the beginning of the belly,—one is under and a little behind the root of the pectoral fin, the other two close together and more behind. The entire carapace is rough and covered with small tubercles. Caudal fin long and rounded. Colour above and on the sides dark purple with numerous white narrow longitudinal lines, running all round the body, four of these on the cheeks; the belly is orange, the fins yellow, immaculate.

Port Phillip. (Casteln.) Length two inches.

FAMILY II. GYMNODONTES.

Body more or less shortened. The bones of the upper and lower jaw are confluent, forming a beak with a trenchant edge, without teeth, with or without median suture. A soft dorsal, caudal and anal fin are developed, approximate. No spinous dorsal. Pectoral fins. No ventrals.

Genus TETRODON, Bibr.

Jaws divided by a median suture. Body with or without small dermal ossifications. Dorsal and anal fins short, with the rays in small number.

Tropical and Sub-tropical Seas; some species in rivers.

1040. TETRODON LÆVIGATUS, L.

Gunth., Cat. Fishes VIII., p. 274. (Synonyms numerous.)

Body entirely naked above and on the sides; abdomen with small three-rooted spines. The length of the head is equal to the distance of the gill-opening from the dorsal fin. Caudal fin forked in adults, sub-truncate in young. Uniform greenish above, sides silvery, abdomen white.

Port Jackson, Torres Straits.

1041. TETRODON LUNARIS, Bl.

Gunth., Cat. Fishes, VIII., p. 274.—Bleek. Atl. Ichth. Gymnod. pl. 1, fig. 2.

Tetrodon spadiceus Richards. Bleek. Atl. Ichth. Gymnod., pl. 3, fig. 1.

Castelnau, Proc. Linn. Soc. N. S. Wales, Vol. III., p. 400.

Moreton Bay.

1042. TETRODON SCELARATUS, L.

Gunth., Cat. Fishes, VIII., p. 276.

T. argenteus, Bleek. Atl. Ichth. Gymnod., p. 64, pl. 5, fig 1.

Head and back finely shagreened above; abdomen with very small three-rooted spines. Sides naked. Body elongate; tail depressed. The length of the head is less than its distance from the dorsal fin. Caudal fin emarginate. Sides with a well defined silvery band; the parts above the band brownish, with small blackish spots. The brown colour encircles the eye; a triangular silvery spot in front of the eye. A brownish band round the chin runs along and below the silvery band. Gill-opening deep black.

South Australia. Length twenty-seven inches.

1043. TETRODON HYPSELOGENION, Bleek.

Atl. Ichth. Gymnod., p. 61, pl. 9, fig. 5.—Gunth., Cat. Fishes, VIII., p. 277.

Back from the inter-orbital space to near the dorsal fin, and nearly the entire abdomen, with spines, which are rather distantly placed, and comparatively, not very small; a cross-band unites the dorsal and abdominal spines behind the pectoral fin, the remainder of the side being naked. The length of the head equals its distance from the dorsal fin. Caudal fin truncate. The upper teeth more than half as large as the lower. The osseous inter-orbital space very narrow, narrower than the eye. Above brown or black, with numerous small round whitish spots. Sides with a broad silvery band, separated from the colour of the back by a longitudinal black stripe, sometimes another shorter stripe along its middle. Lower parts white. Cheek with from three to five sub-vertical brown bars.

Port Jackson. Length five to six inches.

1044. TETRODON OBLONGUS, Bl.

Gunth., Cat. Fishes VIII., p. 278.—Bleek., Atl Ichth., Gymnod., pl. 4, fig. 4.

Back and belly covered with small two rooted spines, the snout and tail naked; the sides are generally crossed by two broad stripes of spines in front and behind the pectoral fin. The length of the head is nearly equal to its distance from the dorsal fin. Caudal fin truncate. The upper teeth not much smaller than the lower. The osseous inter-orbital space is broad in adults, its width being equal to the length of the snout. Upper part of the head and middle of the back brown, with round white spots; on the sides the brown colour descends in irregular transverse bands. Frequently the distribution of the colours on the sides is the same as on the middle of the back; that is, all the upper part of the fish is brown, with round white spots (var. *alboplumbeus).* Frequently a large round, black spot above the end of the pectoral fin. Length twelve to fifteen inches.

King George's Sound.

1045. TETRODON HAMILTONI, Richards.

Voy. Erebus and Terror, p. 63, pl. 39, figs. 10 and 11.—Gunth., Cat. Fishes VIII., p. 280.

The back and abdomen are covered with minute spines; frequently nothing is visible of the spines, except the pores in which they are lodged, and then the entire fish is smooth to the touch, some specimens are entirely spineless. Snout short, only one-half longer than the eye, and equal to the width of the osseous inter-orbital space. The length of the head is less than its distance from the dorsal fin. Caudal fin rounded. Lower lateral fold distinct. Upper parts brown, with numerous close round black spots; cheeks with some brown vertical bands or spots; some large dark blotches on the sides; sometimes an indistinct dark band across the back. Lower parts white.

Port Jackson. Length five and a half inches.

1046. TETRODON RICHEI, Freminv.

Gunth., Cat. Fishes, VIII., p. 285.—Bleek. Atl. Ichth. Gymnod., pl. 9, fig. 3.

Body, from the lips, densely covered with minute spines. Caudal peduncle smooth. Snout rather obtuse; the eye being somewhat nearer to the end of the snout than to the gill-opening. Infra-orbital space broad. Orbit with a free fold in its entire circumference. Light brownish above, with irregular blackish spots and blotches. Lower parts uniform white.

South Australia, Tasmania. Length eleven inches.

1047. TETRODON VIRGATUS, Richards.

Voy. Erebus and Terror, p. 62, pl. 39, figs. 8 & 9.—Gunth., Cat. Fishes, VIII., p. 291.

Small spines cover the entire body, with the exception of the lips and the posterior half of the tail. Snout short and obtuse, rather more than two-fifths of the length of the head, and equal to the width of the inter-orbital space which is flat. Length of the caudal fin equal to its distance from the front margin of the dorsal fin. Body and sides with from six to twelve parallel greyish longitudinal lines on each side. Caudal fin with the upper and lower margins black; root of the pectoral fin black.

Cape York, Port Darwin, Port Jackson. Length ten inches.

Said to be synonymous with *T. immaculatus*, Bloch.

1048. TETRODON PATOCA, Ham. Buch.

Gunth., Cat. Fishes, VIII., p. 288.—Bleek. Atl. Ichth. Gymnod., pl. 6, fig. 2.

Back and abdomen densely covered with very small spines, the snout and tail and a band along the sides being naked. Snout obtuse, convex, its length being less than the width of the inter-orbital space, which is rather convex. Upper parts brownish, with more or less numerous round whitish spots. Sides silvery; abdomen white. A simple, non-perforate nasal cavity with a fringed edge.

Port Darwin.

1049. Tetrodon fasciatus, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 365, pl. 10, fig. 5.

Port Darwin.

1050. Tetrodon Bibroni, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 247.

Moreton Bay.

1051. Tetrodon Staigeri, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 248.

Moreton Bay.

1052. Tetrodon pleurostictus, Gunth.

Proc. Zool. Soc. Lond., 1871, p. 674, pl. 69, fig. A.

The lower side of the tail with a distinct ridge-like fold. The two nasal openings on each side are in a single papilla. The anterior part of the abdomen and sometimes the middle of the back of the trunk with minute spines; the remainder of the fish being entirely smooth. Snout short, its length being less than the width of the inter-orbital space. The length of the head equals its distance from the dorsal fin. Caudal fin truncate. Upper parts brown; sides greyish, gradually passing into the white of the lower parts. A series of three black round spots on each side of the body—the first corresponding to the upper posterior corner of the pectoral fin, the second below the end of the dorsal, and the third on the upper half of the tail near the base of the caudal fin.

Port Bowen, Port Mackay. Length four inches.

1053. TETRODON HISPIDUS, L.

Gunth., Cat. Fishes VIII., p. 297.

Crayracion laterna, Bleck. Atl. Ichth. Gymnod., pl. 1., fig. 3.

Very small spines cover the whole body from the snout to the space between the dorsal and anal fins, the hind part of the tail being naked; abdominal spines with two, three, or four short roots. Two solid nasal tentacles without opening on each side. Snout of moderate length, with the upper profile slightly concave. Orbit prominent, situated in the middle of the length of the head. Inter-orbital space concave, not twice as broad as the orbit. Length of the caudal fin equal to its distance from the front margin of the dorsal. Brown above with not very numerous rounded bluish-white spots. One or two bluish rings round the gill-opening, pectoral fin, and orbit. The lower parts of the sides are variously marked with either blotches or vertical or longitudinal bands or stripes.

Port Jackson. Length twenty inches.

1054. TETRODON FIRMAMENTUM, Schleg.

Gunth., Cat. Fishes, VIII., p. 299.

Small two-rooted spines cover the entire body, except the snout and the posterior part of the caudal peduncle; there are about fifty spines in a longitudinal series between the nostril and dorsal fin. Two solid nasal tentacles without opening on each side. The length of the snout is contained twice and two-thirds in that of the head, and is a little less than the width of the inter-orbital space, which is rather convex. Greyish above, lighter below, all parts with ovate white spots, smaller than the eye, and than the interspaces of the ground colour.

Port Jackson. Length eleven inches.

1055. TETRODON DARWINII, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 94.

The height of the body is one-fourth of the total length, the width nearly the same; the diameter of the eye is three times and a half in the length of the head. The nasal openings are on a prominent papilla in front of the eye. Snout rather obtuse. Two-rooted minute spines cover the upper part of the head and the back to near the end of the pectoral fins, where they terminate in forming a triangle. The front part of the head and cheeks are smooth, the spines beginning behind the nostril. The throat and belly are covered with small spines and pores. The dorsal fin is situated equidistant between the snout and the end of the tail. Caudal fin truncated, its length being about equal to the breadth of the back. Colour in spirits slaty blue above, beneath yellowish; fins yellow. Without spots.

Port Darwin. Length three and a half inches.

1056. TETRODON MARMORATUS, Casteln.

Crayracion marmorata, Casteln. Proc. Zool. Soc. Victoria, Vol. II., p. 148.

One nasal opening only on each side. The upper anterior part of the body from near the end of the pectoral fins to the head, covered with rather strong spines placed a considerable distance from one another; the rest of the head and body smooth. Dorsal fin of eleven rays; caudal of eight long rays, ventrals of ten, and pectorals of sixteen. Above dark brown, covered with very numerous irregular round whitish spots; lower parts and fins yellow.

West Australia. Length five and a half inches.

1057. TETRODON LINEATUS, Bl.

Bleek. Atl. Ichth. Gymnod., p. 70, pl. 8, fig. 1.—Gunth., Cat. Fishes, VIII., p. 295.

Small but rather prominent spines cover the entire body, extending forward to or nearly to the lips, and behind nearly to the root of the caudal fin. Snout short, obtuse, two-fifths or more of the length of the head, and rather more than the width of the inter-orbital space, which is flat or but slightly concave. On each side two solid nasal tentacles without opening. Length of the caudal fin equal to its distance from the dorsal. Colour of a greenish olive with very numerous bluish dots; the abdomen which is very large is beautifully marked with white or yellow fasciæ; fins yellow.

Port Jackson.

1058. TETRODON AMABILIS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 401.

Port Jackson.

Genus DIODON, L.

Jaws without median suture. Body covered with dermal ossifications, each with a pair of lateral roots, and with a stiff, moveable, and erectile spine. Nasal tentacle simple, with a pair of lateral openings.

Tropical Seas.

1059. DIODON HYSTRIX, L.

Bleek. Atl. Ichth. Gymnod., p. 56, pl. 3, fig. 2.—Gunth., Cat. Fishes, VIII., p. 306.

Spines strong, dilated at the base, and with a pair of basal grooves; the post-pectoral spines are the longest, about as long as the pectoral fin, those of the posterior part of the back short and broad. Frontal spines of medium size. The upper and lower side of the tail with two or three pairs of immovable spines. All the upper and lateral parts and the fins with numerous small round black or brown spots.

Port Jackson. (Castelnau.)

1060. DIODON SPINOSISSIMUS, Cuv.

Gunth., Cat. Fishes, VIII., p. 307.

All the spines long, slender, with an anterior ridge between a pair of grooves, not extending beyond a third of the length of the spine. Upper part of the tail with a pair of spines besides those on the sides. The roots of the spines are strong and long, half as long as the spine or longer. There are about seventeen transverse series of spines between the snout and dorsal fin. A more or less distinct blackish band runs from one eye to the other across the throat; sometimes another vertical band in front of the gill-opening. Upper parts blackish, base of each spine with a black spot. Abdomen white.

Port Phillip, West Australia (Castelnau).

1061. DIODON NOVEMMACULATUS, Cuv.

Bleek. Atl. Ichth. Gymnod., p. 57, pl. 2, fig. 3.—Castelnau Proc. Linn. Soc. N.S. Wales, p. 401.—*Atopomycterus Boragei*, Steindacher.

Port Jackson.

1062. DIODON BLOCHII, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 210.

"*Sea Hog*" of Melbourne.

Spines less numerous than in *D. hystrix*. Head broad; mouth wide; the interorbital space equal to two diameters of the orbit; five spines in the first row before the eyes; in all eleven or twelve transverse irregular series, all strong; but particularly the posterior ones. Dorsal fin 13; caudal 9, A. 13, P. 19. Each spine has two long roots and an anterior ridge. Colour pale green on the back, white on the belly, at the root of each spine there is a faint brown spot, and on the posterior part of the body some purple blotches. The fins are green, and immaculate, with darker margins, the eye is orange, and surrounded by a blue ring. Length six inches.

Port Phillip.

Genus CHILOMYCTERUS, Bibr.

Jaws without median suture. Body covered with dermal ossifications, all or most of which consist of three horizontal roots and a stiff erect immovable spine. Nasal tentacle simple, with a pair of lateral openings.

Tropical and Sub-tropical Seas.

1063. CHILOMYCTERUS JACULIFERUS, Cuv.

Gunth., Cat. Fishes VIII., p. 313.—Proc. Zool. Soc., Victoria, Vol. I., p. 211.

Two spines above the orbit; none in the middle of the forehead; no tentacle; there are only five spines in a straight, longitudinal series from the parietal spine to the side of the dorsal fin. Inter-orbital space quite flat; nostrils in front of the orbit. The roots of four spines surround the tail behind the dorsal and anal fins. Spines on the lower parts rather feeble. Jaws strong. P. 19. D. 16. A. 15. C. 9. Three black spots on each side of the body: one in front of the gill-opening, one behind the pectoral fin and a third somewhat in advance of the dorso-anal interspace.

Hobson's Bay (Castelnau).

Genus DICOTYLICHTHYS, Kaup.

Jaws without median suture. Body covered with dermal ossifications, each of which is provided with a spine; the anterior are two-rooted and erectile, the posterior three-rooted and immoveable. Nasal tentacle with two cylindrical and tapering branches; no nostril.

Australia; Cape of Good Hope.

1064. DICOTYLICHTHYS PUNCTULATUS, Kaup.

Gunth., Cat. Fishes VIII., p. 315.

Dorsal spines much shorter than those on the sides and abdomen, those in front of the pectorals erectile, those behind three-rooted. Back of the tail without ossifications; but a root of the last dorsal spine reaches across behind the dorsal fin. About thirteen transverse series of spines between the snout and the dorsal fin. Body with small, round scattered black spots. A black vertical bar below the eye, a second in front of, and a third behind the root of the pectoral fin.

Port Jackson. Length ten or twelve inches.

Genus ATOPOMYETERUS, Kaup.

Characters the same as *Dicotylichthys*, but the dermal ossifications each provided with two rooted erectile spine.

Australia.

1065. ATOPOMYCTERUS NYCHTHEMERUS, Cuv.

Gunth., Cat. Fishes VIII., p. 315.

All the spines slender, rounded, without ridge. Upper part of the tail without spine. The roots of the spines are very short and feeble. About thirteen transverse series of spines between the snout and the dorsal fin. Upper parts blackish-brown; in young individuals the dark colour descends on the sides in four bands, viz., below the eye, in front of and behind the pectoral fin, and above the vent.

Tasmania, South Australia. Length ten or twelve inches.

Genus ORTHAGORISCUS, Bl.

Jaws without median suture. Tail extremely short, truncate; vertical fins more or less confluent. Body compressed, short, covered with a rough or tesselated skin not capable of being expanded by air. Ventral fins none. No pelvic bone. Air bladder absent. An accessory opercular gill.

The seas of the whole World.

1066. ORTHAGORISCUS MOLA, L.

Gunth., Cat. Fishes VIII., p. 317. "*Sun Fish.*"

Body elevated, its depth being more than the length. Skin rough. minutely granulated. Dorsal and anal fins narrow, high. Eye much nearer to the upper profile than to the lower.

Australian Seas.

A stuffed specimen of this Fish in the Macleay Museum, captured about six years ago in Port Stephens, measured about ten feet in length, and nearly fourteen feet in height.

SUB-CLASS II. *PALYICHTHYES.*

Fishes with the skeleton wholly or partly cartilaginous. Heart with a contractile bulbus arteriosus; intestine with a spiral valve; optic nerves non-decussating.

ORDER I. *GANOIDIÆ.*

Fishes with the skeleton more or less ossified. Bulb of the aorta muscular, with numerous valves. Branchiæ free; gill-cavity protected by a gill-cover. Intestine with a spiral valve. Optic nerves not decussating. Ventral fins abdominal if present.

Genus CERATODUS, Agassiz.

A genus formed by Agassiz on a fossil tooth. It probably is referable to the Family *Sirenoidei.*

1067. CERATODUS FORSTERI, Krefft.

Proc. Zool. Soc., London, 1870, p. 222, pl.—figs. 1-2-3.

General form of *Osteoglossum;* scales large, cycloid. L. lat. 35. L. transv. 8. Vent in the posterior third of the total length.

Vertical fins confluent, the dorsal commencing in the middle of the body. The paired fins long, paddle-shaped, with a central scaly axis bearing a rayed membrane above and below. Ventral fins far back. Gill-opening a narrow slit. The upper and lower jaw armed with a pair of very large six or seven-pronged teeth. Skeleton semi-cartilaginous.

Burnett and Dawson Rivers. Length three feet.

1068. CERATODUS MIOLEPIS, Gunth.

Phil. Trans. 1871, part 2, p. 516.

This species has more scales on the transverse line than *C. Forsteri*, but is in other respects alike. It is probably only a variety.

Burnett River.

1069. OMPAX SPATULOIDES, Castelnau.

The description of this genus and species will be found, with all the details known or remembered, in the Proceedings of the Linnean Society of New South Wales, Vol. III., p. 164, pl. 19 A., figs. 1-2-3. I think it is probable that no such Fish was ever found, but I give it a place in my Catalogue, in order to direct attention to the subject, as the liklihood of finding Ganoid Fishes in Queensland waters is asserted by several very distinguished Naturalists.

ORDER II. *CHONDROPTERYGII.*

Skeleton cartilaginous; skull without sutures. Body with medial and paired fins, the hinder pair abdominal; caudal fin with produced upper lobe. Gills attached to the skin by the outer margin, with several intervening gill-openings; rarely one gill-opening only. No gill-cover. No air-bladder. Three series of valves in the bulbus arteriosus. Intestine with a spiral valve. Optic nerves commissurally united, not decussating. Ovaries with few and large ova, which are impregnated *and in some developed internally. Embryo with deciduous external gills. Males with prehensile organs attached to the ventral fins.*

1. *One external gill-opening, covered by a fold of the skin.* (Order *Holocephala*, Gunther).

FAMILY CHIMÆRIDÆ.

Form of the body elongate; pectoral fins free; anterior dorsal fin above the pectorals. Mouth inferior. Ventral organs confluent into two pair of laminæ in the upper jaw, and into one pair in the lower. No spiracles. Males with a peculiar prehensile organ on the upper part of the snout. Skin naked in the adult.

Genus CALLORHYNCHUS, Gronov.

Snout with a cartilaginous prominence, terminating in a cutaneous flap. Two dorsal fins, the anterior with a very long and strong spine. Extremity of the tail distinctly turned upwards, with a fin along its lower edge, but without one above. Anal fin close to the caudal, short and deep.

South Pacific, Cape of Good Hope.

1070. CALLORHYNCHUS ANTARCTICUS, Lacep.

Gunth., Cat. Fishes VIII., p. 351. Syn. *C. Peronii* and *Capensis*, Dum. *C. Australis*, Shaw and Owen; and *C. tasmanius*, Richardson.

The second dorsal fin elevated in front. Pectoral fin very large, extending generally to, or even beyond, the base of the ventral. Claspers sub-cylindrical, with a channel along the interior, opening by a lateral slit. Adult with an obscure blackish lateral band. Young with the upper parts black, and with whitish bands and spots. The young have also a double series of very small dermal spines on the crown of the head, and on the back of the trunk and tail; these spines are also sometimes found in half grown and adult examples, in which, however, they are hidden in the skin.

Coasts of Australia and Tasmania.

2. *From five to seven gill-openings.* (Order *Plagiostomata*, Gunth.)

SUB-ORDER I. *SELACHOIDEI.*

Body more or less cylindrical, gradually passing into the tail. Gill-openings lateral.—Sharks.

FAMILY I. CARCHARIIDÆ.

Eye with a nictitating membrane. An anal fin. The first dorsal opposite to the space between the pectoral and ventral fins, without spine. Mouth crescent-shaped, inferior.

Genus CARCHARIAS, Cuv.

A pit at the root of the caudal fin, which has a distinct lower lobe. Spiracles none. Mouth crescent-shaped; the labial groove or fold is confined to, or does not extend much beyond, the angle of the mouth. Snout produced longitudinally. Teeth with a single sharp cusp, more or less dilated and triangular.

Temperate and Tropical Seas.

1071. CARCHARIAS ACUTIDENS, Rüpp.

Gunth., Cat. Fishes VIII., p. 361.—Mull. & Henle, p. 33.

Snout short and obtuse. Pectoral fins pointed, but little extending beyond the origin of the dorsal. The second dorsal fin is but little smaller than the first, and very similar in size and form to the anal. Nostril with a very distinct valve at its lower half. A short groove at the angle of the mouth. Gills of moderate width. Teeth 27/27-29/29, not serrated.

Torres Straits.

1072. CARCHARIUS MÜLLERI, Mull. & Henle.

Mull. & Henle, p. 30, pl. 19, fig. 1, teeth.—Dum. Elasmobr., p. 347.—Gunth., Cat. Fishes, VIII., p. 360.

Snout elongate and pointed; mouth nearly as long as broad. Teeth in the middle of the lower jaw small, those on the sides much larger and swollen at the base, with an oblique narrow cusp; the upper teeth flat and oblique, none denticulated. End of the base of the first dorsal fin opposite to the origin of the ventrals. Second dorsal very small; anal in advance of the second dorsal.

Cape York.

1073. CARCHARIAS MACLOTI, Mull. & Henle.

Mull. & Henle, p. 34, pl. 10.—Dum. Elasmobr., p. 350.—Gunth., Cat. Fishes, VIII., p. 362.

Snout long, pointed, the nostrils being nearer the mouth than to the extremity of the snout. The teeth of the upper jaw with the base denticulated on both sides; lower teeth without denticulations.

Port Jackson.

1074. CARCHARIAS GLAUCUS, L.

Mull. & Henle, p. 36, pl. 11.—Dum. Elasmobr., p. 353.—Gunth., Cat. Fishes, VIII., p. 364.

"*The Blue Shark*" of European Seas.

Snout very long, nostrils rather nearer to the mouth than to the extremity of the snout. No labial fold, except a groove at the angle of the mouth. Teeth serrated, those of the upper jaw oblique, scarcely constricted near the base; those of the lower jaw slender, triangular in young specimens, lanceolate with a broad base in adults. Pectoral fin long, falciform, extending to the dorsal, which is nearer to the ventrals than to the root of the pectorals. Tail and caudal fin slender.

Port Arthur (Tasmania).

1075. Carcharias gangeticus, Mull. & Henle.

Mull. & Henle, p. 39, pl. 13.—Dum., Elasmobr. p. 359.—Gunth. Cat. Fishes VIII., p. 367.

Snout very short and obtuse; nostrils very close to the extremity of the snout. Teeth serrated, 27/27-30/30, those of the upper jaw triangular, their outer edge with a slight trace of a notch; those of the lower jaw denticulated like the upper, erect, narrow, with broad base. Pectoral fin elongate, falciform. The first dorsal fin commences immediately behind the base of the pectoral and has the anterior margin not convex.

Port Jackson. Length thirty inches.

1076. Carcharias brachyurus, Gunth.

Gunth., Cat. Fishes, VIII., p. 369.

Snout rather pointed, of moderate length, the distance between its end and the mouth being more than the length of the mouth, and about two-thirds of its width. Nostrils much nearer to the mouth than to the end of the snout, but nearer to the end of the snout, than to the angle of the mouth. Teeth in the upper jaw oblique, serrated on both margins, and with a deep notch on the outer margin; teeth of the lower jaw narrow, erect, lanceolate, serrated, on a broad two-rooted base. Gill-openings at least twice as wide as the eye. Pectoral fins narrow, pointed, falciform, the length of their inner margin being one-fourth of that of the outer. Dorsal fin rather nearer to the pectorals than to the ventrals, its distance from the pectorals being but little less than the length of its base. The second dorsal very small, shorter and lower than the anal. Origin of the anal opposite to that of the second dorsal, and midway between the ventral and caudal fins. The length of the caudal is one-fourth of the total length. Coloration uniform.

Port Jackson. Length five to eight feet.

1077. CARCHARIAS MELANOPTERUS, Mull. & Henle.

Mull. & Henle, p. 43, pl. 19, fig. 5.—Dum., Elasmobr.. fig. 305.—Gunth., Cat. Fishes, VIII., p. 369.

Snout short and obtuse; the nostrils being nearer to its extremity than to the mouth. Teeth 25/25-31/31, the upper oblique, with the inner margin straight, and the outer notched; the lower narrower; both serrated. Pectoral fin falciform, the upper margin being thrice as long as the lower, extending to the end of the dorsal. The first dorsal is only a little nearer to the root of the pectoral, than to that of the ventral. Second dorsal opposite to the anal, to which it is similar in size and shape. Extremities of all the fins deep black.

Torres Straits, Port Darwin.

The shark mentioned by me under the nome of *C. hemiodon*, Proc. Linn. Soc. New South Wales, Vol. II., p. 366, is I find *C. melanopterus*.

Genus GALEOCERDO, Muller & Henle.

The first dorsal fin opposite to the space between the pectorals and ventrals, without spine. Caudal fin with a double notch. A pit on the tail, above and below, at the commencement of the fin. A nictitating membrane; pupil of the eye rounded. Small spiracles. Mouth crescent shaped. Teeth sub-equal in both jaws, oblique, serrated on both margins, with a deep notch on the outer margin.

All Seas.

1078. GALEOCERDO RAYNERI, MacDonald & Barron.

Proc. Zool. Soc., 1868, p. 368, pl. 32.—Rams., Proc. Linn. Soc. N.S. Wales, Vol. V., p. 95.

"*Tiger Shark*" of Port Jackson Fishermen.

Port Jackson. Length twelve feet.

Genus GALEUS, Cuv.

The first dorsal fin opposite to the space between the pectoral and ventral fins, without spine. Caudal fin with a single notch. No pit at the commencement of the caudal fin. A nictitating membrane. Small spiracles. Mouth crescent shaped. Teeth equal in both jaws, oblique, with notch and serrature.

Temperate and Tropical Seas.

1079. GALEUS AUSTRALIS, *n. sp.*

The snout is long and depressed, the nostrils being very much nearer to the mouth than to the snout. At the angle of the mouth there is a conspicuous fold, which on the upper jaw is continued a considerable distance, but terminates below close to the angle. Eye with a distinct fold above, the pupil horizontal; spiracle a little behind the eye, a small horizontal slit. The teeth are small and equal in both jaws, strongly notched and strongly serrated on the outer side. The first dorsal fin is about midway between the anterior roots of the pectoral and ventral fins. The second dorsal fin is very small, of the size and shape of the anal, but placed quite half its length in front of it. The caudal fin has a faint trace of a pit above and below at its commencement, and its length is equal to two-thirds of the distance between the first and second dorsals, and is about one-sixth of the total length. A very slight fold extends along each side from the snout to the tail. The upper surface of the snout is marked with numerous pores, and a few are to be traced on the space between the spiracles and the gill-opening; these last are rather small. The fœtus differs in having the spiracles larger and rounder and the fins tipped with black. The colour is pale bluish-grey indistinctly mottled with darker on the back.

Port Jackson. Length six feet. Very numerous and extremely prolific.

This Fish has generally been regarded as identical with *Galeus canis*, "*The Tope*" of English fishermen. I think I am justified in separating them. It is the "*School Shark*" of the Port Jackson Fishermen.

Genus ZYGÆNA, Cuv.

The first dorsal fin opposite to the space between the pectorals and ventrals, without spine. Caudal fin with a single notch. A pit at the commencement of the caudal fin. Anterior part of the head broad, flattened and laterally elongated. Eyes situated at the extremity of the lateral elongations. A nictitating membrane. No spiracles. Nostrils situated on the front edge of the head. Mouth crescent-shaped. Teeth of both jaws similar, oblique, with notch.

Temporate and Tropical Seas.

1080. ZYGÆNA MALLEUS, Shaw.

Gunth., Cat. Fishes, VIII., p. 381. Synonyms numerous.

"*The Hammer-headed Shark.*"

The length of the hinder margin of one side of the hammer is nearly equal to its width near the eye. Nostril close to the eye, prolonged into a groove running along nearly the entire front margin of the head.

Port Jackson, Port Phillip. Length from four to eight feet.

Genus MUSTELUS, Cuv.

The first dorsal fin opposite to the space between the pectorals and ventrals, without spine; the second not much smaller than the first. No pit at the root of the caudal fin, which is without distinct lower lobe. A nictitating membrane. Spiracles small, behind the eyes. Mouth crescent-shaped, with well developed, long labial folds. Teeth small, numerous, similar in both jaws, arranged like pavement, obtuse, or with very indistinct cusps.

Temperate and Tropical Seas.

1081. MUSTELUS ANTARCTICUS, Gunth.

Gunth., Cat. Fishes, VIII., p. 387.—Casteln. Proc. Zool. Soc. Vict., Vol. 1, p. 216.

Snout rather obtuse, not much produced, the length of its præoral portion being somewhat less than the distance between the angles of the mouth. The upper teeth with a rather cutting edge; but without prominent cusp. Origin of the dorsal fin behind the inner posterior angle of the pectoral. Colour uniform grey.

Tasmania, Port Phillip, Port Jackson.

FAMILY II. LAMNIDÆ.

The first dorsal fin opposite to the space between the pectoral and ventral fins, without spine, an anal fin. No nictitating membrane. Mouth crescent-shaped, inferior; nostrils not confluent with the mouth. Gill-openings generally wide. Spiracles none or minute.

Genus LAMNA, Cuv.

The first dorsal fin opposite to the space between the pectoral and ventral fins, without spine; the second dorsal and the anal fins very small. A pit at the root of the caudal fin, which has the lower lobe much developed. Side of the tail with a keel. No nictitating membrane. No spiracles. Mouth wide. Teeth large, lanceolate, not serrated, sometimes with additional basal cusps. Gill-openings very wide.

Temperate and Tropical Seas.

1082. LAMNA GLAUCA, Mull. & Henle.

Oxyrhina glauca, Mull. & Henle, p. 69, pl. 20.

"*The Blue Pointer*" of the Sydney fishermen.

Snout ending in a point, not long, its length from the front of the upper jaw being about equal to the length of the cleft of the mouth. The eyes are situated over the middle of the length of the mouth, and the nostrils are in front of the lower margin of the orbit, and nearer to the orbit than to the point of the snout. The teeth in front of both jaws are long, rather cylindrical, pointed, curved a little backwards and two rooted, those on the sides are shorter, and of more compressed form. Gill-openings very large, about equal. The first dorsal fin is about midway between the vertical from the pectoral and ventral fins; it is triangular, nearly as high as long, and terminating behind its lower extremity in a small pointed lobe. The pectoral fins are rather small, and but slightly falciform, the posterior margin being only slightly emarginate. The second dorsal fin is extremely small, with a pointed lobe behind; in size and form the anal fin is exactly similar, but its commencement is opposite the posterior point of the second dorsal. The caudal fin is rather small, the lower lobe more than half the size and very much of the form of the upper. On each side of the tail, beginning opposite the termination of the anal fin, there is a very prominent sharp edged cutaneous keel, and terminating at the commencement of the caudal fin, its width at its middle being near the one-fourth of its length. The skin is very finely shagreened, almost smooth. The colour of the upper half of the body is blue, of the lower white, the line of demarkation between the two colours being distinctly marked and exactly in the middle of the sides, the keel on the tail being exactly on the line.

Coasts of New South Wales. Length twelve feet.

Genus CARCHARODON, Muller & Henle.

The first dorsal fin opposite to the space between the pectoral and ventral, without spine, the second and the anal very small.

A pit at the root of the caudal, which has the lower lobe well developed. Side of the tail with a keel. No nictitating membrane. Spiracles minute. Sometimes absent. Mouth crescent-shaped, wide. Teeth large, flat, erect, regularly triangular, serrated. Gill-openings wide.

Temperate and Tropical Seas.

1083. CARCHARODON RONDELETII, Mull. & Henle.

Mull. & Henle, p. 70.—Dum., Elasmobr., p. 411.—Gunth., Cat. Fishes VIII., p. 392.

"*The White Pointer*" of Sydney Fishermen.

General appearance of *Lamna glauca*, with the same form of snout and tail, but differs in having the teeth, though as long, much broader and compressed, and serrated. The eye is situated more over the front of the mouth. The first dorsal fin nearer the pectoral fin, which is much longer, but not falciform. The keel on each side of the tail is longer and not so wide, and the lower lobe of the caudal is almost if not quite as long as the upper. Colour pale bluish-grey.

Australian Seas. Port Jackson. Greatest length thirty-six feet.

Genus ODONTASPIS, Agass.

The first dorsal fin opposite to the space between the pectoral and ventral fins, without spine; the second dorsal and the anal not much shorter than the first dorsal. No pit at the root of the tail; its side without keel. No nictitating membrane. Spiracles minute, pore-like, above the angle of the mouth. Mouth crescent shaped, wide. Teeth large, awl-like, with one or two small cusps at the base. Gill-openings of moderate width.

Temperate and Tropical Seas.

1084. ODONTASPIS AMERICANUS, Mitch.

Gunth., Cat. Fishes, VIII., p. 392.—*O. taurus*, Mull. & Henle, p. 73, pl. 30.

"*The Grey Nurse*" of the Sydney Fishermen.

The first tooth of the upper jaw not smaller than the second. One or two small teeth between the third and fourth long tooth on each side of the upper jaw. Long teeth with a single small cusp on each side of the base. The first dorsal fin very close to the root of the ventral. Length ten feet.

Port Jackson, Tasmania, South Australia.

Genus Alopecias, Mull. & Henle.

The first dorsal fin opposite to the space between the pectoral and ventral fins, without spine; the second dorsal and anal very small. Caudal fin of extraordinary length, with a pit at its root. No keel on the side of the tail. No nictitating membrane. Spiracles immediately behind the eye, minute or sometimes absent. Mouth crescent-shaped. Teeth equal in both jaws, of moderate size, flat, triangular, not serrated. Gill-openings of moderate width.

Temperate and Tropical Seas.

1085. Alopecias vulpes, L.

Mull. & Henle, p. 74, pl. 35, fig. 1, teeth.—Gunth., Cat. Fishes, VIII., p. 393

The third tooth on each side of the upper jaw much smaller than the others. Pectoral fins large, falciform. Tail half or more than half the total length.

Port Jackson (Macl. Mus.) Length seven feet.

Family III. NOTIDANIDÆ.

Characters of the single genus.

Genus Notidanus, Cuv.

One dorsal fin only, without spine, opposite to the anal. No pit at the root of the caudal fin. No nictitating membrane.

Spiracles small, on the side of the neck. No lateral fold. Mouth crescent-shaped. Dentition unequal in the jaws: in the upper jaw one or two pairs of awl-shaped teeth, the following six being broader and provided with several cusps, one of which is much the strongest. Lower jaw with six large comb-like teeth on each side, beside the smaller posterior teeth. Six or seven wide gill-openings.

Temperate and Tropical Seas.

1086. Notidanus indicus, Cuv.

Macd. & Barr., Proc. Zool. Soc., 1868, p. 371, pl. 33.—Gunth., Cat. Fishes VIII., p. 398.

Snout short and rounded; cleft of the mouth broader than long. A single median pointed tooth in the upper jaw; the lower median tooth with lateral cusps, but without central cusp. The first cusp of the lower teeth is much stronger than the others and serrated on its outer margin.

Jervis Bay, Port Jackson. Length five feet.

Family IV. SCYLLIDÆ.

The first dorsal fin above or behind the ventrals, without spine; an anal fin. No nictitating membrane. Spiracle distinct. Mouth inferior. Teeth small, several series being generally in function.

Genus Scyllium, Cuv.

Two dorsal fins without spines; the first above or behind the ventrals; the origin of the anal fin is always in advance of that of the second dorsal. Spiracle behind the eye. Nasal cavity separate from the mouth. Teeth small, with a middle longer cusp and generally one or two small lateral cusps, arranged in numerous series. Eggs similar to those of Rays. Upper edge of the caudal fin not serrated.

Temperate and Tropical Seas.

1087. Scyllium maculatum, Bl.

Gunth., Cat. Fishes VIII., p. 401.—(Not *maculatum* of Gray, Richardson, Bleeker, Dumeril, Muller and Henle, and Cantor.)

Nasal valves confluent, without cirrus, forming together a broad flap in front of the mouth, with the hinder margin concave. Both jaws with a well developed labial fold, extending from the symphysis of the lower jaw, round the angle of the mouth, to the nasal flap. Teeth of the lower jaw of moderate size, with a long median cusp, and a pair of small cusps on each side. Gill-openings narrow. Skin of the trunk rough. Ventral fins obliquely truncated behind. End of the anal fin below the middle of the dorsal, the length of its base is equal to that of the dorsal and three-fourths of its distance from the caudal. Brownish, above and below, with scattered round brown spots scarcely as large as the eye and distant from one another.

Port Darwin, Port Jackson. Length two feet.

1088. Scyllium laticeps, Dum.

Dum., Elasmobr., p. 323.—Gunth., Cat. Fishes VIII., p. 404.

The nasal valves are not confluent, are separated from each other by a very broad interspace, and without prominent cirrus. No labial fold. Teeth very small, tri-cuspid. Head very broad and depressed. End of the anal fin nearly opposite to the end of the dorsal; anal a little longer than the dorsal, the length of its base being nearly equal to its distance from the caudal. Brownish marbled with darker.

Tasmania.

Genus Parascyllium, Gill.

Two dorsal fins without spines, the first behind the ventrals; origin of the anal fin in advance of the second dorsal. Spiracle minute, below the posterior angle of the orbit. Nasal and buccal cavities confluent. Two nasal valves each with a short cirrus. Lower lip well developed. Teeth small, lanceolate, only those of the lower jaw with indistinct lateral cusps. The four first gill-openings distant and much narrower than the last, which is approximate to the fourth and very wide.

Australia.

1089. PARASCYLLIUM VARIOLATUM, Dum.

Dum. Elasmobr., p. 327.—Gunth., Cat. Fishes VIII., p. 410.

Lower lip not continuous across the symphysis of the lower jaw; mouth midway between the eye and the extremity of the snout. The two dorsal fins sub-equal in size, the first very distant from the root of the ventral; anal nearly entirely in advance of the second dorsal. Dark brown above with more or less distinct black spots.

Tasmania. Length from two to three feet.

1090. PARASCYLLIUM NUCHALE, M'Coy.

Ann. & Mag. Nat. Hist. 1874, XIII., p. 15, pl. 2.

Body and fins clouded with two shades of chocolate brown, with a broad blackish brown nuchal collar extending from the base of the pectoral fin to halfway between the eye and the first gill-opening; and two or three very conspicuous large spots of the same dark colour on each of the fins; the whole of the sides and back covered with white spots, smaller and more crowded on the dark nuchal collar; under side of throat and abdomen pale whitish-brown. Mouth nearer to the snout than to the eyes.

Port Phillip. Length two feet nine inches.

Genus CHILOSCYLLIUM, Mull. & Henle.

Two dorsal fins without spines; the first above or behind the ventrals. Anal fin placed far behind the second dorsal, and very close to the caudal. Spiracle very distinct, below the eye. Nasal and buccal cavities confluent. Nasal valve folded, with a cirrus. Lower lip well developed, continuous or interrupted in the middle. Teeth small, triangular, with or without lateral cusps. The two last gill-openings close together.

Indian and Australian Seas.

1091. CHILOSCYLLIUM OCELLATUM, L.

Gunth., Cat. Fishes VIII., p. 410.—Muller & Henle, p. 16.—Dum. Elasmobr., p. 326.

The lower labial fold is not continued across the symphysis. The first gill-opening narrower than the second, scarcely wider than the orbit. Mouth much nearer to the end of the snout than to the eye. Body with scattered round black spots; a large black white edged ocellus above the pectoral fin.

Cape York, Port Darwin, Torres Straits. Length from two to three feet.

1092. CHILOSCYLLIUM TRISPECULARE, Richards.

Voy. Erebus & Terror, p. 43, pl. 28.—Gunth., Cat Fishes VIII., p. 411.

The lower labial fold is not continued across the symphysis. The first gill-opening is as wide as the second and distinctly wider than the orbit. Mouth much nearer to the end of the snout than to the eye. Head and body covered with small brown spots, which on the hinder part of the trunk are arranged in small rings; some indistinct dark bands across the back; a large black white edged ocellus with one or two smaller ocelli behind it, above the pectoral fin.

North-west Australia. (Richardson.) Length twenty-two inches.

1093. CHILOSCYLLIUM MODESTUM, Gunth.

Proc. Zool. Soc., 1871, p. 654, pl. 54.

The lower labial fold is not continued across the symphysis. Mouth at the lower surface of the snout, at some distance from its extremity, but nearer to the latter than to the eye. Dorsal fins sub-equal in size, with the angles not produced, close together, the distance between them being somewhat more than one-half of the length of the base of the first. Origin of the first dorsal above the middle of the base of the ventrals. Uniform brown, darker on the back than on the sides.

Queensland. (Gunth.) Length twenty and a half inches.

1094. CHILOSCYLLIUM FURVUM, *n. sp.*

Lower labial fold divided at the symphysis. Nasal cirrus rather long, close to the snout and distant from the mouth. Upper lip more than half as long as wide. Snout rounded and somewhat depressed. The spiracle behind and beneath the eye, very large, nearly round and surrounded by a distinct fold. The eyes are small and oblong. The gills are narrow, the last much wider than the others, but very little closer to the fourth than the preceding one. Pectoral fins rounded behind. The two dorsal fins are of about equal size, very nearly the length of their base apart, and truncate posteriorly. The skin is very finely shagreened and glossy, of a reddish-brown above and on the sides, with indistinct darker cross bars, and scattered small yellowish or whitish spots; beneath the colour is yellowish; there is a distinct fold along each side of the back to the tail.

Port Jackson. Length from two to three feet.

Genus CROSSORHINUS, Muller & Henle.

Two dorsal fins, without spines,—the first behind the ventrals, the second in advance of the anal, which is very close to the caudal. Tail rather short. Eye small. Spiracle in a wide oblique slit, behind and below the eye. Nasal and buccal cavities confluent. Head broad, flat, with the snout very obtuse; mouth wide, nearly anterior. A free nasal cirrus; sides of the head with skinny appendages. Upper and lower lips well developed. Anterior teeth rather large, long, and slender, without lateral lobes; the lateral teeth tricuspid, smaller, forming a few series only. The fourth and fifth gill-openings close together.

Australia, Japan.

1095. Crossorhinus barbatus, L.

Muller & Henle, p. 21, pl. 5.—Gunth., Cat. Fishes, VIII., p. 414.

About seven skinny simple or partly bifid lobes on each side of the head, five of which are near the angle of the mouth. Very minute barbels across the chin are sometimes absent. Distance between the two dorsal fins equal to the length of the base of the first. Upper parts brown, marbled with grey; a whitish spot behind the spiracle.

Port Jackson, (the "*Wobbigong* of the natives,) Tasmania, South Australia, &c. Length five to seven feet.

1096. Crossorhinus tentaculatus, Peters.

Gunth., Cat. Fishes VIII., p. 414.

A single flat tentacle at the angle of the mouth, another on the side of the throat. Chin without barbels. Distance between the two dorsal fins much less than the length of the base of either. Back with very broad brown cross-bands, the posterior encircling the tail entirely. A white spot behind the spiracle.

Cape York.

Family V. CESTRACIONTIDÆ.

Characters of the single genus.

Genus Heterodontus, Blainv.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 309.

The Pacific Ocean.

1097. HETERODONTUS PHILLIPII, Lacep.

Proc. Linn. Soc., N.S. Wales, Vol. III., p. 309-313, pl. 22, 23, 24.

Port Jackson, Port Phillip.

1098. HETERODONTUS GALEATUS, Gunth.

Proc. Linn. Soc., N.S. Wales, Vol. III., p. 313, pl. 25.

Port Jackson.

FAMILY VI. SPINACIDÆ.

Two dorsal fins; no anal fin. Mouth but slightly arched; a long, deep, straight, oblique groove on each side of the mouth. Spiracles present; gill-openings narrow. Pectoral fins not notched at their origin.

Genus ACANTHIAS, Muller & Henle.

Two dorsal fins, each with a spine; no anal fin. Mouth but slightly arched; a long, deep, straight, oblique groove on each side of the mouth; no labial fold along the margin of the mouth. Teeth equal in both jaws, rather small, their point so much turned aside that the inner margin of the tooth forms the cutting edge. No nictitating membrane. Spiracle rather wide, immediately behind the eye. Gill-openings narrow.

Temperate Seas.

1099. ACANTHIAS VULGARIS, Risso.

Mull. & Henle, p. 83.—Dum., Elasmobr., p. 437.—Gunth., Cat. Fishes VIII., p. 418.

Origin of the dorsal fin opposite to or behind the inner posterior angle of the pectoral. Dorsal spines without groove. Snout produced. Colour bluish-grey, with white spots in young specimens.

New Holland (Gunther).

1100. ACANTHIAS BLAINVILLEI, Risso.

Mull. & Henle, p. 84.—Dum., Elasmobr., p. 438.—Gunth., Cat. Fishes VIII., p. 419.

Resembling *A. vulgaris*, but with the first dorsal fin conspicuously in advance of the inner posterior angle of the pectoral.

New Holland (Gunther).

1101. ACANTHIAS MEGALOPS, *n. sp.*

Head flat; snout long, tapering and rounded in front, the distance from the mouth to the snout about equal to the width of the mouth, which is moderately crescent-formed and has a straight oblique groove at the angle. The nostrils are near the snout, and twice the distance from the mouth. The orbital cavity is of great length, about equal to its distance from the point of the snout, and its height is less than half its length; close to and above the posterior corner of the eye is a rather large oblique spiracle. The first dorsal fin is placed in advance of the vertical from the posterior angle of the pectoral; the ventrals are placed opposite the middle of the space between the two dorsals. A very conspicuous keel runs along each side of the tail immediately below the median lateral line. Colour uniform greyish-brown.

Port Jackson. Length two feet.

Genus ISISTIUS, Gill.

Two very small dorsal fins, without spine, the first nearly opposite to the ventrals; no anal fin. Skin uniformly granular. Mouth transverse; a deep straight groove at each angle of the mouth, the fold which covers it runs round the whole margin of the upper jaw; an upper and lower free lip besides. Nostrils nearly in front of the snout. Upper teeth small, narrow, lanceolate, the lower much larger, triangular, nearly erect, with smooth edges. No nictitating membrane. Spiracles wide, on the side of the neck. Gill-openings, very narrow, in a groove.

Tropical Seas.

1102. Isistius braziliensis, Quoy & Gaim.

Mull. Henle, p. 92.—Dum., Elasmobr., p. 453.—Gunth., Cat. Fishes VIII., p. 429.

Leius ferox, Kner, Denkschr., Ak. Wiss. Wien., pl. 4. fig. 2.

Twenty-five teeth in the lower jaw. Scales minute, granular. The first dorsal fin immediately in front of the ventrals. Sometimes a broad dark band across the chest.

Australia (Kner).

Family VII. RHINIDÆ.

Characters of the single genus.

Genus Rhina, Klein.

Body depressed, flat. Mouth anterior. Pectoral fins large, expanded in the plane of the body, with the basal portion prolonged forwards, but not grown to the head. Gill-openings rather wide, lateral, partly covered by the base of the pectoral. Spiracles wide, behind the eyes. Nostrils with skinny flaps, on the margin of the snout. Teeth conical, pointed, distant. Dorsal fins on the tail, without spines; no anal fin. Males with small prehensile appendages.

Temperate and Tropical Seas.

1103. Rhina squatina, L.

Gunth., Cat. Fishes VIII., p. 430. (Many synonyms).

"*The Angel Shark*" of Fishermen.

This is the only species of the genus. It nearly approaches the Rays. The colour is uniform dark brown. Length from two to four feet.

Coasts of Australia, Port Jackson.

FAMILY VIII.—PRISTIOPHORIDÆ.

The rostral cartilage is produced into an exceedingly long flat lamina, armed along each edge with a series of teeth like a saw.

Genus PRISTIOPHORUS, Mull. & Henle.

Body rather depressed and elongate. Pectoral fins with the front margin quite free, distant from the head. Gill-openings lateral, in front of the pectoral fin, of moderate width. Spiracles wide, behind the eye. No nictitating membrane. Nostrils inferior; a pair of long tentacles at the lower side of the rostral lamina. Teeth small, with a conical cusp on a broad base, arranged in several series. Dorsal fins without spine, the first in front of the ventrals; no anal fin. Upper caudal lobe broader than the lower.

Japan and Australia.

1104. PRISTIOPHORUS CIRRATUS, Latham.

Mull. & Henle, p. 98.—Lath. Trans. Linn. Soc., 1794, pl. 26, figs. 5 & 27.

Gunth., Cat. Fishes VIII., p. 432.

Teeth of the saw very unequal in length, there being from one to two smaller ones between the larger. Scales extremely minute, with a single keel, their point not projecting. Dorsal and pectoral fins entirely covered with scales. The distance between the tentacle and nostril equals that between the nostril and the third or fourth gill-opening. Forty-two sets of teeth in the upper jaw.

Tasmania, South Australia, Port Jackson.

1105. PRISTIOPHORUS NUDIPINNIS, Gunth.

Gunth., Cat. Fishes VIII., p. 432.

Teeth of the saw very unequal in length. Scales minute, nearly smooth, with traces of two or three keels at the base. The greater portion of the dorsal fins and of the upper side of the pectorals, naked. The distance between the tentacle and the nostril is considerably less than that between the nostril and the first gill-opening. From thirty-five to thirty-nine sets of teeth in the upper jaw.

Tasmania, South Australia.

SUB-ORDER II. *BATOIDEI.*

Gill-openings ventral. Body depressed. Tail generally long. Spiracles always present. Five pairs of gill-openings. No anal fin. Dorsal fin, if present, on the tail.—Rays.

FAMILY I. PRISTIDÆ.

The snout is produced into an exceedingly flat lamina, armed with a series of strong teeth along each edge.

Genus PRISTIS, Latham.

Body depressed and elongate. Pectoral fins with the front margin quite free, not extending to the head. Gill-openings inferior, inwards of the base of the pectoral fin, of moderate width. Spiracles wide, behind the eye. No nictitating membrane. Nostrils inferior; no tentacles. Teeth minute, obtuse. Dorsal fins without spine, the first opposite or close to the base of the ventrals.

Tropical and Sub-tropical Seas.

1106. PRISTIS ZYSRON, Bleek.

Gunth., Cat. Fishes VIII., p. 438.

Origin of the dorsal fin above the middle of the root of the ventrals. From twenty-six to thirty-two pairs of rostral teeth; the anterior placed close together, the distance between them not being more than twice the base of a tooth. The three hindmost teeth are thrice as remote from one another as the anterior. The second dorsal fin is not smaller than the first, and its posterior lobe extends nearly to the root of the caudal. No lower caudal lobe.

Moreton Bay. One specimen over sixteen feet in length.

FAMILY II. RHINOBATIDÆ.

Tail strong and long, with two well developed dorsal fins; a caudal and a longitudinal fold on each side. Disk not exceedingly dilated, the rayed portion of the pectoral fin not being continued to the snout. No electric organ.

Genus RHINOBATUS, Mull. & Henle.

Body depressed, gradually passing into the tail. Cranial cartilage produced into a long rostral proces, the space between the process and pectoral fin being filled by a membrane. Spiracles wide, behind the eye. Nostrils oblique, wide; anterior nasal valves not confluent. Teeth obtuse with an indistinct transverse ridge. Dorsal fins without spine, both at a great distance behind the ventral fins. Caudal fin without lower lobe.

Tropical and Sub-tropical Seas.

1107. RHINOBATUS GRANULATUS, Cuv.

Mull. & Henle, p. 117, pl. 38.—Dum. Elasmobr., p. 493.—Gunth., Cat. VIII., p. 443.

Anterior nasal valve not dilated laterally. Snout produced, the distance between the outer angles of the nostrils being contained about once and two-thirds in that between the mouth and the end of the snout. Mouth straight. Back covered with very distinct rough tubercles, and with a series of large compressed spines along the median line. Some distinct spinous tubercles on the orbital margin and on the shoulder. The two rostral ridges are narrow, and united nearly from the base. Colour greyish with a few faint distant whitish spots.

Port Jackson, Cape York.

1108. Rhinobatus Banksii, Mull. & Henle.

Mull. & Henle, p. 123 & 192.—Dum. Elasmobr., p. 490.—Gunth., Cat. VIII., p. 446.

The anterior nasal valve is continued towards the median line by a short fold, which, however, is far from reaching those of the other side. The distance between the inner angles of the nostrils is more than the length of a nostril. Snout produced. Mouth arched; the median tooth of the lower jaw larger and more prominent than the lateral. A series of small tubercles along the middle of the back, and two short rows on each shoulder.

Australia (Gunther).

1109. Rhinobatus Thouini, Mull. & Henle.

Mull. & Henle, p. 120.—Dum. Elasmobr., p. 500, pl. 10.—Gunth., Cat. Fishes VIII., p. 442.

Anterior nasal valve not dilated laterally. Nostril very long, its length being more than the space between the inner angles of the nostrils. Snout terminating in a long narrow cartilaginous appendage. Mouth straight. Skin coarsely granular. A series of compressed spines along the median line of the back; similar spines on the orbital margin and shoulder. Rostral ridges confluent, narrow. Colour entirely light chamois-grey.

West Australia (Castelnau).

1110. Rhinobatus Dumerilii, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 148.

Snout very obtuse, rounded, broad, with semicircular outline. The distance to the outer angles of the nostrils is three-fourths of that between the mouth and the end of the snout; no spines on the eyes or shoulders; a median line of strong, compressed, arched spines, placed far apart. The rostral ridges are arched inwardly, and on their anterior part are only separated by a narrow groove. The dorsal fins are equal to the length of the interocular space; the dorsal tubercles between the fins are feeble; they are not visible at all behind the second dorsal. The upper surface is rough and covered with small tubercles. The colour is light brown above, yellowish-white beneath.

West Australia. Length fourteen inches.

Genus TRYGONORHINA, Mull. & Henle.

Differs from *Rhinobatus* only in having the anterior nasal valves broad, and confluent into a broad, quadrangular flap with a free margin overhanging the mouth.

Australia.

1111. TRYGONORHINA FASCIATA, Mull. & Henle.

Mull. & Henle, p. 124, pl. 43.—Dum. Elasmobr., p. 502.—
Gunth., Cat. Fishes VIII., p. 400.

"*The Fiddler*" of the Sydney Fishermen.

Snout rather short, the distance between its extremity and the mouth being not much more than the distance between the outer angles of the nostrils. A series of obtuse distant tubercles along the median line of the back; some similar tubercles above the eye and on the shoulder. Colour pale reddish-brown, with numerous wavy irregular light coloured fasciæ, edged with dark brown.

Tasmania, Victoria, South Australia, New South Wales.

FAMILY III. TORPEDINIDÆ.

The trunk is a broad smooth disk; tail with rayed dorsal and caudal fins and a longitudinal fold along each side. Anterior nasal valves confluent into a quadrangular lobe. An electric organ composed of vertical hexagonal tubes between the pectoral fins and the head.

Genus NARCINE, Henle.

Tail distinct from and longer than the sub-circular disk, with a fold on each side. Body entirely naked. Two dorsal fins on the tail, without spine; caudal fin well developed; ventral fins separate. Nasal valves confluent into a quadrangular valve. Teeth almost flat, sometimes with a median point, which however does not project. Spiracles immediately behind the eye. An electric apparatus between the head and the pectoral fins.

Tropical and Sub-tropical Seas.

1112. NARCINE TASMANIENSIS, Richards.

Trans. Zool. Soc. III., p. 178, pl. 11, fig. 2.—Gunth., Cat. Fishes VIII., p. 452.

Outline of the disk elliptical. Spiracle close behind the eye, without tubercles on the margin. The first dorsal fin not larger than the second. Hind-margin of the caudal fin obliquely rounded, passing into the lower margin. Colour brownish.

Tasmania. Length up to six feet.

Genus HYPNOS, Dum.

Tail extremely small and short like an appendage. Body entirely naked. Two dorsal fins on the tail, without spine, caudal fin well developed. Nostrils round, open, without valves. Teeth tri-cuspid, with very slender points. Spiracle immediately behind the eye. An electric apparatus on each side of the head.

Australia.

1113. HYPNOS SUBNIGRUM, Dum.

Rev. Zool. 1852, p. 279, pl. 12.—Gunth., Cat. Fishes, VIII., p. 453.

Eyes minute; spiracles fringed. Upper parts black, with or without white spots.

Port Jackson, West Australia.

FAMILY IV. RAJIDÆ.

Disk broad, rhombic, generally with asperities or spines; tail with a longitudinal fold on each side. The pectoral fins extend to the snout. No electric organ. No serrated caudal spine.

Genus RAJA, Cuv.

Tail very distinct from the disk, which is of a rhombic shape, with a fold on each side. Body generally rough or with spines, rarely entirely smooth. Two dorsal fins on the tail, without spine. Tail with a rudimentary caudal fin or without fin. Each ventral fin divided into two by a deep notch. Nasal valves separated in the middle, where they are without a free margin. Teeth obtuse or pointed. Pectoral fins not extending forward to the extremity of the snout. Sexes differing in the form of the teeth and in the dermal spines.

All Seas.

1114. RAJA LAMPRIERI, Richards.

Voy. Erebus and Terror, p. 43, pl. 23.—Gunth., Cat. Fishes VIII., p. 463.

"*Thorn Back*" of the Melbourne fishermen.

Snout short and somewhat obtuse. The space between the eyes is equal to the diameter of the eye. Teeth pointed. Outer angle of pectoral fin rounded. The width of the body equals the distance from the snout to the posterior base of the ventrals. Spines on the superciliary edge, on the mesial line between the head and the humeral cartilage, and a row beginning at the pelvis runs down the middle of the tail, directed alternately to right and left. There are also a few scattered spines, but these like all the other spines vary considerably in size. Colour greyish-brown, tip of the snout black.

Tasmania, Port Phillip.

1115. Raja rostrata, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 57.

The snout long; body entirely covered with asperities, which are more considerable on the snout, where they form small triangular points; on the lower surface of this part of the edges, up to the height of the eyes these points are considerable and crowded. Anterior profile deeply concave; the angle of the pectorals is rather pointed; there are no spines round the eyes, but a series of three or four is seen on each side of the back and ends before the insertion of the ventrals; the tail is armed with three series of strong tubular spines, and one or two are seen on the middle of the back behind the head. Colour greyish-purple with the sides reddish; body generally covered with white spots.

Port Phillip. (Attains the weight of 60 lbs.)

Count Castelnau gave a description of this Fish in the Proc. Zool. Soc. Vict. Vol. I., p. 224, under the name of *R. oxyrhynchus*, Lin., and subsequently in the 2nd Volume points out his mistake.

Family V. TRYGONIDÆ.

The pectoral fins are uninterruptedly continued to and confluent at the extremity of the snout. Tail long and slender, without lateral longitudinal folds; vertical fins none, or imperfectly developed, often replaced by a strong serrated spine.

Genus Urogymnus, Mull. & Henle.

Tail long, very distinct from the sub-circular or elliptic disk, without fin or spine, sometimes with a narrow cutaneous fold below. Body densely covered with osseous tubercles. Pectoral fins united in front.

Indian and Australian Seas.

1116. Urogymnus asperrimus, Bl.

Dumeril. Elasmobr., p. 580.—Gunth., Cat. Fishes, VIII., p. 472.

The dorsal surface of the head and trunk and the tail are densely covered with osseous tubercles, between which larger erect conical thorns are scattered; the pectoral fins without the small tubercles, but with numerous large thorns each standing on a circular base.

Cape York. (Chevert Exp.)

Genus TRYGON, Mull. & Henle.

Tail tapering, without any fin or with cutaneous folds not extending to its extremity, armed with a long arrow-shaped spine, serrated on each side. Body smooth or with tubercles. Pectoral fins united in front. Nasal valves coalescent into a quadrangular flap. Teeth flattened.

Temperate and Tropical Seas.

1117. TRYGON UARNAK, Forsk.

Mull. & Henle, p. 158.—Dum. Elasm., p. 585.—Gunth., Cat. Fishes VIII., p. 473.

Tail without cutaneous fold, exceedingly long and slender, about thrice as long as the disk. Snout rather pointed, forming a distinct projection in the anterior profile, the margins meeting at an angle which is fully or less than a right angle. One or more large tubercles in the middle of the back; young examples are smooth, but with progressing age the entire dorsal surface becomes covered with small tubercles. No large tubercles in the median line of the tail. Disk about as broad as long. Uniform brown, or with numerous dark brown spots; tail of young specimens with brown and white rings.

Port Darwin.

1118. TRYGON PASTINACA, Linn.

Mull. & Henle. p. 161.—Dum. Elasm., p. 600.—Gunth., Cat. Fishes, VIII., p. 478.

"The Sting Ray."

Tail with a distinct cutaneous fold below, and a slight ridge above, about one-half longer than the disk or less. The margins of the snout form an obtuse angle. Body smooth, sometimes a few small tubercles pointing backwards, in the median line of the scapulary region. Three appendages at the bottom of the mouth, behind the teeth. Coloration uniform, or sometimes with small round, scattered whitish, non-ocellated spots.

Port Darwin, Port Jackson.

1119. TRYGON TUBERCULATA, Lacep.

Dumeril. Elasmobr., p. 605.—Gunth., Cat. Fishes VIII., p. 480.

Tail with a distinct fold below, a very low upper fold being as frequently absent as present. The tail is more than twice the length of the disk. Snout pointed and rather produced. A series of spinous tubercles, each pointing backwards at the tip. runs from the scapulary region to the caudal spine; older individuals having the back of the head and trunk more or less covered with small tubercles. Minute tubercles on the tail. Three papillæ at the bottom of the mouth behind the teeth. Dental laminæ much undulated. Coloration uniform, almost black. Length of disk two feet.

Port Jackson.

Genus UROLOPHUS, Mull. & Henle.

Tail of moderate length with a distinct rayed terminal fin, armed with a serrated spine, without or with a rudimentary dorsal fin. Pectoral fins united in front. Mouth and teeth as in *Trygon*.

Australia and West Indies.

1120. UROLOPHUS CRUCIATUS, Lacep.

Dumeril, Elasmobr., p. 626.—Gunth., Cat. Fishes, VIII., p. 485.

Urolophus ephippiatus, Richards., Voy. Ereb. and Terr., 35, pl. 24.

Disk rather broader than long, the anterior margins being straight and meeting at an obtuse angle; snout not projecting. Skin entirely smooth. Tail shorter than the disk. Yellowish, uniform or with one or three blackish longitudinal bands, crossed by others of the same colour.

Port Arthur.

1121. UROLOPHUS TESTACEUS, Mull. & Henle.

Mull. & Henle, p. 174, pl. 56.—Gunth., Cat. Fishes, VIII., p. 486.

Syn. *U. Mulleri*, *Henlei*, and *australis*, of Steindachner.

Disk rather broader than long, the anterior margins meeting at a very obtuse angle; snout not projecting. Skin entirely smooth. Tail shorter than the disk in adults, rather longer in young specimens. Nasal valve fringed; six short papillæ at the bottom of the mouth. Coloration uniform.

Cape Upstart, Port Jackson.

FAMILY VI. MYLIOBATIDÆ.

The disk is very broad in consequence of the great development of the pectoral fins, which, however, leave the sides of the head free, and re-appear at the extremity of the snout as a pair of detached (cephalic) fins.

Genus MYLIOBATIS, Cuv.

Head free from the disk; snout with a soft appendage in front, supported inferiorly by fin-rays. Nasal valves coalescent into a quadrangular flap. Teeth hexangular, large, flat, tesselated; those in the middle much broader than long; several narrower series on each side. Tail very long and thin, with a dorsal fin near its root; generally a serrated spine behind the fin.

Temperate and Tropical Seas.

1122. MYLIOBATIS AQUILA, L.

Mull. & Henle, p. 176.—Dum., Elasm , p. 634.—Gunth., Cat. Fishes, VIII., p. 489.

Body entirely smooth. The skinny prolongation of the snout is obtuse, and but moderately produced. Median teeth of the upper jaw from four to six times as broad as long. The insertion of the dorsal fin is behind or opposite the extremity of the ventral fins. Orbit with scarcely a trace of a projection above. Coloration uniform.

Port Jackson (Gunther).

1123. MYLIOBATIS NIEUHOFII, CUV.

Mull. & Henle, p. 177.—Dum., Elasm., p. 638.—Gunth., Cat. Fishes, VIII., p. 491.

Body smooth. The fleshy protuberance at the snout very short and obtuse. Disk twice as broad as long. The origin of the dorsal fin nearly opposite to the end of the root of the ventrals. Orbit without horn. Young individuals with five blue cross-bands. No spots.

Port Phillip (Castelnau).

1124. MYLIOBATIS AUSTRALIS, *n. sp.*

Body smooth. No fleshy protuberance on the snout. The disk from end to end of pectoral fins rather less than twice the length from the extremity of the snout, to the end of the base of the ventrals. The dorsal fin inserted a little in front of the caudal spine, and behind the end of the ventral. Colour yellowish or yellowish-brown, with large blue blotches irregularly distributed over the dorsal surface.

Port Jackson.

Genus AËTOBATIS, Mull. & Henle.

Form of the head, body and tail as in *Myliobatis.* The nasal flaps remain separate, each forming a long flap. The lower dental lamina projects beyond the upper. Teeth flat, broad, forming a single series, equivalent to the median series of *Myliobatis,* there being no small lateral teeth.

Tropical Seas.

1125. AËTOBATIS NARINARI, Cuv.

Mull. & Henle, p. 179.—Dum., Elasm. p. 641.—Gunth., Cat. Fishes VIII., p. 492.

Body smooth. Dorsal fin situated between the ventrals. Disk generally with numerous round bluish white spots. The teeth of the lower jaw are sometimes angularly bent, sometimes nearly straight.

Cape York.

Genus CERATOPTERA, Mull. & Henle.

Head free from the pectoral fin, truncated in front, on each side with a horn-like appendage pointing forward or inward, which is a cephalic portion of the pectoral fin. Mouth anterior, wide. Teeth in the lower jaw only, very small. Tail very slender, with a dorsal fin between the ventrals and without spine.

Tropical and Temperate Seas.

1126. CERATOPTERA ALFREDI, Krefft.

This is the name affixed to a stuffed specimen of this genus of enormous size, in the Australian Museum. It was captured at Manly Beach in 1868, and was considered by Mr. Krefft a new and undescribed species, but unfortunately he never described it, and description is now impossible, so much painting and puttying and clipping have been practised in setting up the specimen.

SUB-CLASS III. *CYCLOSTOMATA.*

Skeleton cartilaginous and notochordal, without ribs and without real jaws. Skull not separate from the vertebral column. No limbs. Gills in the form of fixed sacs without branchial arches, six or seven in number on each side. One nasal aperture only. Heart without bulbus arteriosus. Mouth anterior, surrounded by a circular or sub-circular lip, suctorial. Alimentary canal straight, simple, without cæcal appendages, pancreas, or spleen. Generative outlet peritoneal. Vertical fins rayed.

FAMILY PETROMYZONTIDÆ.

Body eel shaped, naked. Subject to a metamorphosis. In the perfect stage with a suctorial mouth armed with teeth simple or multicuspid, horny, sitting on a soft papilla. Maxillary, mandibulary, lingual, and suctorial teeth may be distinguished. Eyes present (in mature animals). External nasal aperture in the middle of the upper side of the head. The nasal duct terminates without perforating the palate. Seven branchial sacs and apertures on each side behind the head. The inner branchial ducts terminate in a separate common tube. Intestine with a spiral valve. Eggs small. The larvæ without teeth and with a single continuous vertical fin. "Lampreys."

Genus MORDACIA, Gray.

Dorsal fins two, the posterior continuous with the caudal. The maxillary dentition consists of two triangular groups, each with three conical acute cusps; two pairs of serrated lingual teeth.

Chili and Australia.

1127. MORDACIA MORDAX, Richards.

Voy. Erebus and Terror, pl. 28.—Gunth., Cat. Fishes VIII., p. 507.

Mandibulary lamina crescent-shaped, with about nine acute conical cusps, ~~three~~ two of which are larger than the others. Suctorial teeth in somewhat distant series, radiating from the centre; the teeth of the series between the mandible and the posterior lip being as numerous as those of the other series, but rather more confluent. The anterior labial teeth converge and are confluent behind; each tooth of the posterior pair is like one-half of an elongate oval. Suctorial disk elliptic, with a free lip behind. The first dorsal at a considerable distance from the second. Body immaculate.

Tasmania, Port Phillip.

Genus NEOMORDACIA, Casteln.

Differs from *Mordacia* in having only one dorsal fin, separate and rather distant from the caudal fin.

Australia.

1128. NEOMORDACIA HOWITTII, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 232.

"Height of body about nineteen times in the total length; the length of the snout, up to the external edge of the eye, a little longer than the height of the body. The head is not inflated, and follows on to the snout by an arched line, and on the body by a straight one; the dentition is very difficult to be distinctly seen with the weak magnifying power I possess, but I observe a row of strong conical and pointed teeth placed round the mouth and wide apart; a few teeth on each side larger than the others and inserted forwards; there are a few others further back, and a few are tri-cuspid. There are a few fringes round the mouth; the branchiostegal apertures are seven, they are round and begin at a short distance from the eye, which is large. The first half of the body and the head are like reticulated, and covered with irregular excavations; the middle of the body is smooth, but the posterior portion is again similar to the anterior. It is of a dark blue on the upper parts and silvery below; the caudal fin is red and the eye yellow; the muzzle black." (Castelnau).

Cape Schank. Length three inches.

Genus Geotria, Gray.

Dorsal fins two, the posterior separate from the caudal fin. Maxillary lamina with four sharp flat lobes; a pair of long pointed lingual teeth (like the horns of a young Antelope).

Chili and Australia.

1129. Geotria australis, Gray.

Proc. Zool. Soc., 1851, p. 238.—Gunth., Cat. Fishes VIII., p. 508.

ch Günther

" Skin on the throat very lax, forming a large pouch. The maxillary lamina is thin, crescent-shaped, with four sharp teeth, the middle pair of which are only half as broad as the outer. Mandibulary lamina very low, slightly sinuous. Suctorial teeth in numerous series, rather distant from one another, unicuspid; only those nearest to the mouth somewhat larger, the others small. Only one transverse series of very small teeth between the mandibulary lamina and the posterior lip, which is beset with numerous broad leaf-like fringes, as in the remainder of the margins of the disk. Suctorial disk sub-triangular, with the lateral lobes very broad. First and second dorsal fins rather widely separated. Coloration uniform."

South Australia. Length twenty inches.

1130. Geotria chilensis, Gray.

Gunth., Cat. Fishes, VIII., p. 509.

" Skin on the throat not dilated. The outer lobes of the maxillary dental lamina are broad with a sharp convex edge, the inner narrow and pointed. Mandibulary lamina crescent-shaped with numerous obtuse points. Suctorial teeth in numerous series, so close together that the teeth have the appearance of imbricate scales. A series of larger, broad, scale-like teeth round the mandibulary lamina. Suctorial disk not dilated, circular. First and second dorsal fins widely separate. Side and abdomen silvery; back greenish.

Swan River. Length twenty-one inches. "

1131. GEOTRIA ALLPORTI, Gunth.

Proc. Zool. Soc., 1871, p. 675, pl. 70.

Entirely black; skin with numerous transverse folds. Gular pouch large. The two middle teeth of the maxillary lamina are small, pointed, many times smaller than and entirely disconnected from the lateral, which are of a triangular shape and finely serrated on the inner margin. Mandibulary lamina very low, denticulated. Suctorial teeth in numerous series, rather distant from one another, unicuspid; only those nearest to the mouth somewhat larger, the others small. Form of the suctorial disk as in *G. australis*. Distance between the two dorsal fins, less than the length of the first. Length thirteen inches.

Tasmania (fresh water).

A curious Fish, probably an *Ammocœtes*—the name given to the larval form of Fishes of this family—has been described by Count Castelnau from the Yarra River, Melbourne. I quote the Count's description in full.

1132. YARRA SINGULARIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 231.

" The body is eel-shaped, naked, cylindrical, and elongate, being twenty-three times as long as high. It is entirely divided into annular rings, which appearance seems to be due to the muscular flakes being very visible through the smooth skin. I can see no teeth, the upper lip is flat, and considerably prolonged over the buccal aperture; it is truncated in front, and this part seen upperly, is rather bi-furcated. The lateral line is well marked in all the length of the body; there is only one dorsal, which begins at about two-thirds of the length of the body, and is joined with the caudal and anal fins; the latter is considerably shorter than the dorsal. No eye visible. The skin of the throat is rather extensible; the prolongation of the upper lip over the lower is equal to the height of the body. The tail is pointed. The colour is of a light green with the belly white, on the back extends a narrow longitudinal line; the head and throat are pink, and the fins of the same colour."

Yarra River (brackish water). Length four and three-eighth inches.

SUB-CLASS IV. *LEPTOCARDII.*

Skeleton membrano-cartilaginous and notochordal, ribless. No brain. Pulsating sinuses in place of the heart. Blood colourless. Respiratory cavity confluent with the abdominal cavity; branchial clefts in great number, the water being expelled by an opening in front of the vent. Jaws none.

FAMILY CIRROSTOMI, Owen.

Characters of the single genus.

Genus BRANCHIOSTOMA, Costa.

Body elongate, compressed, scaleless, limbless. Mouth a longitudinal fissure, with sub-rigid cirri on each side, inferior. Vent at a short distance from the extremity of the tail. A low rayless fin-like fold runs along the back, round the tail, past the vent to the respiratory aperture. Eye rudimentary. Liver reduced to a blind sac of the simple intestine.

Coasts of temperate regions, imbedded in sand.

1133. BRANCHIOSTOMA LANCEOLATUM, Pall.

Gunth., Cat. Fishes VIII., p. 513.—(Many synonyms.)

"*The Amphioxus*" and "*The Lancelet.*"

Transparent, slightly iridescent.

Dredged in Bass' Straits (H.M.S. Herald) and since in many parts of the coasts of New South Wales and Queensland. Length three inches.

ON MENKE'S AUSTRALIAN SHELLS.

BY RALPH TATE, ASSOC. LINN. SOC., F.G.S.; COR. MEM. ACAD. SC. PHILADELPHIA, ROY. SOC. TASMANIA, &C., PROFESSOR IN THE UNIVERSITY OF ADELAIDE.

INTRODUCTORY CITATION.

"Menke's "Molluscorum Novaê Hollandiaê" is a very rare work; I have never seen but two copies in Australia. There are none in any of our public libraries.* It would be a very small expense; but a great boon, to reprint it."—Rev. J. E. Tenison-Woods, Roy. Soc. N.S.W., Sept. 1878.

And again "How difficult it would be to obtain Menke's Latin pamphlet on the Mollusca of New Holland."—The same, Proc. Linn. Soc. N.S.W., Vol. IV., p. 479, 1880.

The above quoted work, which was published in 1843, is an octavo of forty-six pages; it contains a catalogue of two hundred and sixty-three species of Australian, land, fresh-water, and marine shells, the major part of which was collected in Western Australia by Dr. J. A. L. Preiss, during the years 1838 to 1842.

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* A copy has since been added to the Library of the University of Adelaide, and the Library of the Linnean Society. Mr. Brazier of Sydney has had a copy in his Library many years.

Taking example from the Rev. J. E. Tenison-Woods in his. reproduction of the descriptions of Gould's Australian Shells, Proc. Linn. Soc., N.S.W., Vol. II., p. 250, 1877.) and acting on his suggestion implied in the above introductory citation, I offer in the following pages a reprint of Menke's diagnoses of the sixty marine shells, which bear his name. The land forms described by Menke have already been dealt with by Dr. Cox in his "Monograph of the Australian Land Shells."

Menke's species have, for the most part, been overlooked by monographers, especially does Reeve seem to have been unacquainted with them; and it is, therefore, the more desirable, that the original diagnoses of them should be readily accessible to Australian conchologists.

The following are the only species stated to have been collected on the eastern coast of Australia, and of these, excepting the last two, no reference is made to them by any other writer on Australian Shells, at least so far as I am aware:—*Neritina Listeri*, Pfr. (probably an erroneous identification), *Phasianella Lehmanni*, Mke., *P. Preissii*, Mke., *P. perdix*, Gray, *P. rubens*, Lam., *P. brevis*, Mke., *Crassatella Kingicola*, Lam., and *Pectunculus radians*, Lam.

The fauna made known by the researches of Dr. Menke is essentially Indian, and shows conclusively that the tropical forms of molluscan life prevail as far south as Swan River. It contrasts very strongly with that of King George's Sound, as made known by Quoy and Gaimard, which possesses a truly Australian facies, such as characterizes the whole length of the southern shore of the Continent and around Tasmania.

CASSIDULA RUGATA, No. 15, p. 7.

Testa ovato-elliptica, solida, transversum striata, anfractibus septem; ultimo supra longitudinaliter plicato-rugoso, cæsio, infra spiraque brevi *prunina; labri margine externo incrassato, supra albo limbato, infra dentibusque tribus columellaribus aurantio.* Long. 15, lat. 8 lines.

Hab. R. Victoria, on the north-west.

[Is described under the above name by Pfeiffer in his Monograph of the *Auriculidæ*, Brit. Mus. Cat.]

PALUDINA GRANUM, No. 19, p. 8.

Testa globoso-conoidea, perforata, lævi, albida; anfractibus quinque convexis, rotundatis; ultimo ventricoso, concolore vel fasciis duabus rufis cincto; spira brevi, sutura profunda; aperturæ subrotundæ fauce fulva. Long. 1·3, lat. 1 line.

Hab. In white quartz sand on the banks of Swan River.

[One of the specimens examined by Menke had adherent to it a minute slender serpulid, for which reason he believed it to have lived in salt water. It occurs frequently as a beach Shell at King George's Sound, Great Bight, Spencer and St. Vincent's Gulf; and lives in the tidal portions of some of the South Australian Rivers, but more especially on the mud flats of sheltered bays. I have not examined the animal, but its operculum is thin, horny, and paucispiral. Frauenfeld quotes it as *Amnecola granum*, and Tenison-Woods has described it as *Assiminea Tasmanica* from Sorrel, and as *Rissoa Siennaê*, from north coast of of Tasmania.]

MELANIA LIRATA, No. 21, p. 9.

Testa oblongo-turrita, flavo-virente, flammulis longitudinalibus interruptis fuscis picta; anfractibus septem (aut pluribus); ultimo liris exiguis plurimis cincto, spiræ exsertæ oblique plicatis; plicis medio tuberculiferis; apertura ovato-elliptica. Long. 8·5, lat. ventr. 3·5 lines.

Hab. Brackish water River Avon, West Australia.

LITTORINA RUGOSA, No. 23, p. 9.

L. testa globoso-conoidea, solida, sordide albida, transversim sulcato-striata; anfractibus quinque ad sex: ultimo ventricoso, rotundato infra, spiræ brevis acutæ totis plicato-rugosis; aperturæ ovatæ fauce rufa. Long. 9, lat. 6·5, alt 5·5 lin.

Hab. On limestone rocks, Arthur's Head, at the entrance to Swan River.

Similar to, but distinct from *L. irrorata*, Menke.

LITTORINA ACUTA, No. 24, p. 9.

L. testa ovato-conoidea, solida, albida, nitida, transversim tenuiter striata; anfractibus septem: ultimo infra medium subangulato, supra angulum, spiræ mediocris acutæ inferius zona coerulescente cinctis; aperturæ ovatæ fauce brunnea, anterius in labro fascia alba. Long. 8'5, lat. 5·5, alt. ·5 lin.

Hab. Calcareous rocks, Western Coast.

Allied by habit and size to *L. obesa*, Sowerby. [This seems to be the widely dispersed *L. mauritiana*, Lamarck *(Phasianella)*.]

NATICA SAGITTATA, No. 30, p. 10.

N. testa subglobosa, laevi, nitida, caesia, lineis longitudinalibus densi flexuosis, ad basin et infra suturam macularum subrotundarum serie, in medio ultimi anfractus macularum sagittatarum acuminibus suis dextrorsum spectantium rufarum seriebus tribus picta; spira brevi; umbilico calli columellari albo simplici angustato, canaliculato. Long. 4·8; lat. 4, alt. 3·5 lin.

Hab. Western Coast.

Similar in habit and size to *N. marochiensis*, Lamarck; but differs in coloration and in the form of the umbilicus.

[I refer the South Australian *N. marochiensis* to Menke's species.]

NATICA SERTATA, No. 31, p. 10.

N. testa ovato-semiglobosa, transversa, solida, laevi, albida; anfractibus quinque infra suturam longitudinaliter sulcato-crenatis: ultimo macularum ramosarum fuscarum duplici serie ornato; spira bevi; umbilico ut in praecedente. Long. 7, lat. 5·3, alt. 4·3 lin.

Hab. Western Coast.

Has some resemblance to *N. costata*, Menke. [Apparently this species occurs fossilised in the pleistocene marine beds at Port Adelaide.]

PHASIANELLA LEHMANNI, No. 41, p. 12.

Ph. testa ovato-conica, solidiuscula, lævigata, flammis lineolis-que interruptis fusco-carneis vel roseis undulatis longitudinalibus lineisque albis continuis confertis transversis decussata; spiræ productæ acutæ, anfractibus convexiusculis. Long. 2 inches 3 lines, lat. 1 inch.

Hab. Eastern Coast, rare.

[Doubtlessly one of the numerous varieties of *Ph. bulimoides.*]

PHASIANELLA PREISSII, No. 42, p. 12.

Ph. testa ovato-conica, solidiuscula, lævigata, ex aurantio et fulvo tincta, lineis ex nigro articulatis sparsis cincta; spiræ productæ acutæ; anfractibus convexius culis. Long. 2 inches, lat. 11 lines.

Hab. Eastern Coast.

[Doubtlessly another variety of *P. bulimoides*]

PHASIANELLA BREVIS, p. 12, No. 45.

Ph. testa subgloboso-ovata, solidiuscula, lævigata, rufa, flammis angulatis laceris pallidis longitudinalibus lineis-que transversis articulatis decussata; anfractu ultimo turgido; spiræ brevis conoideæ, anfractibus convexis. Long. 9, lat. 6 lines.

Hab. Eastern Coast.

[Apparently a small form of *P. ventricosa.*]

TURBO LEHMANNI, No. 48, p. 13.

T. testa orbiculato-convexa, oblique conoidea, umbilicata, tenui, apice margaritacea, basi maculis coccineis tessellata striata, superius triata; anfractibus quinque: ultimo bicarinato, spiræ unicarinatis, superius maculis radiantibus nigris, aurantiis et albis alternantibus, infra carinam superiorem lineolis transversis interruptis, ad carinam inferam fascia maculari ex iisdem coloribus articulata cinctis. Operculum huic immersum tenue corneum. Long. 3·5, lat. 3, alt. 2·5 lines.

Hab. On the shore, near Port Lechenault.

Congeneric with *Margarita pulchella*, and *M. multicolor.*

[This is the species to which Angas, Proc. Zool. Soc., 1865, p. 182, applies the name *Gibbula Preissiana*, Philippi.]

MONODONTA MELANOLOMA, No. 50, p. 14.

M. testa orbiculato-convexa, oblique conoidea, imperforata, solida, rudi, cinerea, basi et marginis labri acuti limbo interno atris; columellæ callo subcanaliculato; labro interius incrassato et porcato. Long. 10, lat. 9, alt. 6·5 lines.

Hab. Western Coast.

[This is apparently a *Trochocochlea*, and is doubtlessly the same as *T. chloropoda*, mihi, which inhabits the Great Bight.]

MONODONTA CRENULATA, No. 52, p. 14.

M. testa orbiculato-conoidea, cana, maculis fuscis irrorata; anfractibus convexis, porcis subgeminatis confertis obsolete crenulatis cinctis; umbilico aperto, inermi, spirali; columella arcuata, basi libera in denticulum producta; labro intus sulcato. Long. 8, lat. 7·5, alt. 5·5 lines.

Hab. Western Coast.

[Possibly a species of *Euchelus.*]

MONODONTA BACCATA, No. 51, p. 14.

M. testa orbiculato-conoidea, imperforata; anfractibus turgidis, granulorum dense junctorum ordinibus (in ultimo quindecim) cinctis, interstitiis longitudinaliter trabeculatis; sutura canaliculata; columella basi dente exiguo, fauce margaritacea; labro intus sulcato. Long. 5, lat. 4, alt. 3·5 lines.

Hab. Western Coast.

[This species is usually quoted as *Euchelus baccatus*, but it remains to be proved if it be distinct from *Turbo canaliculatus*, Lamarck.]

MONODONTA RINGENS, No. 53, p. 14.

M. testa oblique pyramidali, umbilicata, pallida, maculis rubris latescentibus radiata, basi et ad suturam marginata, granulorum ordinibus cincta; columella recta, torta, dentibus inæqualibus retrorsis umbilicum angustante; labro interne lirato; liris prope marginem superum incrassatis. Long. 4, lat. 3·5, alt. 3·5 lines.

Hab. Western Coast.

[A *Clanculus.*]

MONODONTA MAXILLATA, No. 55, p. 14.

M. testa orbiculato-convexa, umbilicata, pallida, punctis rubro-fuscis articulata, vel nigra, lirata: liris spiræ nudis, anfractus ultimi granulis exilibus aequalibus obliquis distinctis; umbilico exterius crenis, intus columellæ rectæ tortæ dentibus inaequalibus angustato; labri margine interno tuberculis oblongis dentato. Long. 4·5, lat. 3·8, alt. 2·8 lines.

Hab. Western Coast.

[Apparently a *Clanculus.*]

MONODONTA LUPINA, No. 56, p. 15.

M. testa orbiculato-convexa, umbilicata, fusco-rufa, lirata: liris baseos nudis, anfractuum acqualiter granulosis; sutura subcanali-

culata; umbilico aperto exterius subcrenato; columella recta, basi in dentem producta; labro intus dentibus linearibus munito. Long. 3·5, lat. 3, alt. 2 lines.

Hab. Western Coast.

[A *Clanculus.*]

MONODONTA TURRITA, No. 57, p. 15.

M. testa oblique conica, imperforata, solida, pallide carnea; anfractibus convexiusculis, liris subgranulosis nigro-articulatis cinctis; columellæ obsolete tuberculato-crenatæ basi truncata sinu a labro intus lirato disjuncta; apertura patula, sabquadrangulari. Long. 9, lat. 5 lines.

Hab. Western Coast.

[This is probably *Thalotia conica*, Gray, which I have received from King George's Sound.

MONODONTA APICINA, No. 58, p. 15.

M. testa ovato-fusiformi, subturrita, ventriculosa, imperforata, lævigata, nitida, fulva, lineis flexuosis obliquis anterius confertissimis picta, sub epidermide aureo-margaritacea; anfractibus inferius convexiusculis, superius subconstrictis: ultimo in medio subdepresso; columella basi libera in plicam compressam desinente; apertura patula, labro dehiscente intus lævi. Long. 11, lat. 45 lines.

Hab. Western Coast.

Allied to *M. lineata*, Lamarck [but a well defined species, which is quoted as *Elenchus apicinus*].

MONODONTA VIRGATA, No. 59, p. 15.

M. testa, ovato-elliptica, subturrita, subcurva, imperforata, lævigata nitida, pallida vel flavo-virente, lineis longitudinalibus raris vel virgatis obliquis rubris varie picta; anfractibus medio convexiusculis; ultimo in medio rotundato; columellæ basi libera truncata

in plicam dentiformem desinente ; apertura patula ; labro intus lævi. Long. 5-7, lat. 3 to 3·8 lines.

Hab. Western Coast.

[This is *Elenchus irisodontes*, Quoy & Gaimard (*Trochus*).]

TROCHUS PRASINUS, p. 16, No. 64.

Tr. testa pyramidali, imperforata, ex olivaceo et prasino tincta, basi plana concentrice sulcata ; anfractibus planiusculis ; inferioribus granulis oblongis longitudinaliter dispositis alutaceis, superioribus ad suturam inferam nodiferis ; labro juxta columellæ basin retortam inciso. Diameter of base and height 1 inch 8 lines.

Hab. Western Coast.

Menke places this between *T. cöerulescens*, Lamk., and *T. obliquus*, Gmelin.

TROCHUS CILIARIS, No. 66, p. 17.

Tr. testa pyramidali, imperforata, fulva, maculis rufis suturas sequentibus variegata, transversim striata ; striis tenuissimis decussata, basi plana ; anfractibus planulatis, inferius marginatis, superius ciliato-fimbriatis ; apertura ovato-lanceolata ; labro intus callo marginato. Diam. of base 15, alt. 12 lines.

Hab. North-western Coast.

[A *Ziziphinus.*].

TROCHUS VIRIDULUS, No. 67, p. 17.

Tr. testa oblique pyramidali, imperforata, flavo-virente ; basi convexiuscula ; anfractibus transversim sulcato-striatis, utrinque marginatis ; sutura profunda ; apertura subquadrangulari ; labro intus lævi. Diam. of base 3, alt. 3·5 lines.

Hab. Western coast.

[A *Zizyphinus.*]

TROCHUS CHLOROSTOMUS, No. 68, p. 17.

Tr. testa oblique pyramidali, imperforata, carnea, flammis angulosis fuscis posterius albo marginatis radiata; anfractibus planatis, transversim striatis, iuferius marginatis; columella arcuata, obsolete crenata, basi sua sinu a labro sulcata disjuncta; apertura patente subtetragona. Diam. of base 8, alt. 7·5 lines; of a smaller form Diam. of base and height 5·5 lines.

Hab. Western Coast.

[This elegantly sculptured and chastely coloured *Zizyphinus* ranges eastward to St. Vincent's Gulf.]

TROCHUS PREISSII, No. 69, p. 17.

Tr. testa ovato-conoidea, subrimata, nitida, vel viridi fusco virgata vel punctata, vel carnea flammis fuscis radiata; anfractibus plano convexis, costis latiusculis approximatis (in ultimo anfractu 8 *ad* 11) *baseos convexæ ex nigro articulatis cinctis; apertura patente subrotunda; labro coccineo marginato interius sulcato. Operculum huic corneum' tenue.* Long. 7, lat. 4 lines.

Hab. Western Coast.

[The above description answers very well to the S. Australian *Thalotia pulcherrima*, Wood.]

TROCHUS LEHMANNI, No. 70, p. 18.

Tr. testa ovato-conoidea, imperforata, cana, radiis vel flammis olivaceis radiata; anfractibus medio angulatis, porcis tenuibus confertissimis (in ultimo anfractu 18) *bascos convexæ ex nigro alboque articulatis cinctis; apertura patente subrotunda; labro coccinea marginato intus obsolete lirato.* Long. 6·4, lat. 3·8 lines.

Hab. Western Coast.

[Perhaps a *Thalotia.*]

TROCHUS IMPERVIUS, No. 71, p. 18.

Tr. testa orbiculato-convexa, oblique subconoidea, imperforata, tenui, cinerea vel rubida, lineis ex albo articulatis confertis fasciaque maculari infra suturam cincta; columella plano depressa, basi subcanaliculata; labro acuto interius sulcato. Diam of base 8·3, alt. 6 lines.

Hab. Western Coast; and Cape of Good Hope.

[Probably a *Ditoma.*]

TROCHUS VITILIGINEUS, No. 73, p. 18.

Tr. testa orbiculato-convexa, oblique depresso-conoidea, tenui, subpellucida, albido cinereoque nebulosa, lineis ex fusco alboque articulatis confertis fasciaque maculari fusca infra suturam et ad peripheriam cincta, tenuissime striata; anfractibus convexis medio angulatis, superius planis; ultimo basi convexo; umbilico aperto spirali; labro acuto. Diam of base 5, alt. 3·3 lines.

Hab. Western Coast.

[It is quoted as *Monilea vitiliginea,* and extends around the South Coast to Port Jackson.

BUCCINUM ACUMINATUM, No. 87, p. 20.

B. testa oblongo-fusiformi, subulata, laevigata, basi striata, rufa, fascia infra suturam maculari ex albo nigroque articulata; apertura oblonga; labro intus denticulato. Long. 8, lat. 2·5 lines.

Hab. Western Coast.

[The description applies to *Columbella Menkeana,* Reeve, a common South Australian Shell.]

BUCCINUM FASCICULARE, No. 91, p. 21.

B. testa fusiformi ovata, ventricosa, nitida, sub-pellucida, tota tenuissime, basi striis duabus tribusve distinctioribus transversis striata, alba, lineis exilibus distantibus transversis aliisque fasciculatis longi-

tudinalibus fusco-rufis picta; labri intus laevis margine anterius denticulato. Long. 9, lat. 5·5 lines.

Hab. Western Coast.

CASSIS PAUCIRUGIS, No. 107, p. 23.

C. testa ovata vel ovato-elliptica, laevigata s. polita, alba; anfractu ultimo superius, spirae breve conicae nudae, anfractibus medio subangulatis, ad angulum nodosis; labri reflexi margine extenso subfasciato, interno dentato lirato; columellae basi vix rugosa.

Var. A. *Testa elliptico-ovata;* long. 2 inches 4 lines, lat. 1 inch 5 lines.

Var. B. *Testa ovata;* long. 1 inch 8 lines, lat. 1 inch 2 lines.

Hab. Western Coast.

[This is referred to the section *Casmaria* of the genus *Semicassis.*]

COLUMBELLA BIDENTATA, No. 108, p. 23.

C. testa ovato-fusiformi s. biconica, laevi, nitida, alba, lineis flexuosis densis longitudinalibus fuscis reticulata; anfractibus superius obsolete tuberculatis; ultimo inferius striato; labri margine interno dentato; labio denticulato; columella medio macula lilacina tincta, interius biplicata. Long. 7, lat. 4 lines.

Hab. Western Coast.

Closely allied to *C. coronata*, Kiener, but differs in being more slender with the whorls hardly tuberculated, and in its peculiar coloration.

TRITONIUM TABULATUM, No. 119, p. 25.

Tr. testa ovato-fusiformi, varicosa, fusco-rufa, porcata et cingulata: cingulis prominulis sulco divisis; superioribus anfractus ultimi et medianis spirae mediocris contabulatæ et longitudinaliter plicatae tuberculatis; cauda subadscendente perforata; apertura alba; columella laevi; labro intus obsolete dentato. Long. 16, lat. 9 lines.

Hab. Western Coast.

This species is, in a manner, intermediate between *T. cutaceum* Linné, and *T. pileare.*

[Has apparently much resemblance to the South Australian *T. Waterhousei*, Adams and Angas.]

TRITONIUM RUTILUM, No. 120, p. 25.

Tr. testa ovato-fusiformi, subturbinata, ventricosa, univaricosa, pallide fulvo, maculis fuscis longitudinaliter seriatis picta, transversim striata et cingulata: cingulis costas longitudinales decussantibus, spirae mediocris medianis aurantiis; cauda brevi perforata; columella laevi; labro intus obsolete dentato; apertura alba. Long. 7, lat. 5 lines.

Hab. Western Coast.

[Is identical with *T. labiosum*, Wood. Index. Test. Supp. (*teste* Angas).]

FUSUS VENTRICOSUS, No. 125, p. 26.

F. testa ovato-fusiformi, ventricosa, obtusa, pallide fulva, basi subfusca, transversim sulcata, longitudinaliter costato-plicata; anfractibus quatuor; spira mediocri; labro intus laevi; fauce fulva. Long. 4, lat. 2·7 lines.

Hab. Western Coast.

FUSUS EXILIS, No. 126, p. 26.

F. testa fusiformi-turrita, acuminata, pallida, transversim lirata, longitudinaliter costato-plicata; anfractibus septem; spira producta; labro intus lævi; fauce rufa. Long. 4·5, lat. 2 lines.

Hab. Western Coast.

CONUS RUTILUS, No. 133, p. 27.

C. testa turbinato-obconica, medio subinflata, tenui, rutila, liris tribus distantibus obsoletis striisque tenuissimis confertis cincta; spira depressa, coronata, canaliculata, rufo-radiata. Long. 6, lat. 4 lines.

Hab. North-west Coast.

[Extends to S. Australia and New South Wales. Tasmanian examples have been named *C. Tasmanicus* and *C. Macleayanus*, T.-Woods]

MARGINELLA LITURATA, No. 146, p. 28.

M. testa ovato-oblonga, luteo-cana s. ochroleuca, lineolis longitudinalibus angularibus interruptis punctatis fuscis superius magis conspicuis picta; spira breve conica; labri margine externo punctato, interno crenato; columella quadriplicata. Long. 9, lat. 5 lines.

Hab. Western Coast.

Allied to *M. limbata*, Lamarck, which is larger, ovate, and the longitudinal lines continuous; also to *M. helmatina*, Rang.

[A very distinct species belonging to the Section *Glabella*.]

TEREBRA ALBULA, No. 163, p. 30.

T. testa fusiformi-turrita, subulata, lactea, unicolore, laevigata, nitida, longitudinaliter plicata; anfractibus quatuordecim planius culis indivisis; plicis in ultimo anfractu inferius evanidis. Long. 8·5, lat. 2 lines.

Hab. Western Coast.

HALIOTIS SCABRICOSTA, No. 172, p. 31.

H. testa ovata, convexa, transversim (n. e. spiraliter) costata; costis squamis imbricatis confertis exasperatis; spira prominula, submediana; margine columellari sub-rotundato-aequo. Long. 3 inches 2 lines, lat. 2 inches 4 lines.

Hab. Mistaken Island.

Junior testa exterius ex rubro viridique radiata, vel ex rubro albidoque laete varia est; adulta et senescens virescit. M.

Menke gives for synonym, *H. excavata*, var. B. Lam. (Delessert, Recueil d' Coq. pl. 33, f. 6.)

HALIOTIS SEMIPLICATA, No. 173, p. 31.

H. testa subrotundo-ovata, medio convexo depressa, transversim striata, anterius longitudinaliter plicata; plicis compressis erectiusculis; spira prominula, postica, submediana; margine columellari rotundato, exterius declivi. Long. 19, lat. 14 lines.

Hab. Western Coast, rare.

Species intermediate between *H. Midæ*, L., which is much smaller, and *H. lamellosa*, Lam., the test of which is of an elliptical shape, and the striæ deeply incised.

FISSURELLA OBLONGA, No. 181, p. 33.

F. testa oblongo-elliptica, convexa, margine antico posticoque rotundato adscendente s. surrecto, radiatim denseque obsolete porcata, striis concentricis decussata, rosea, circa foramen ovato-oblongum magnum pallida. Long. 9, lat. 4·5, alt. 2·5 lines.

Hab. Western Coast, rare.

[Probably is *F. scutella*, Gray, Sow. Conch. Ill. f. 34.]

PATELLA INSIGNIS, No. 187, p. 34.

P. testa ovata, convexa, nitida, subpellucida, obsolete concentrice striata, posterius verticaliter subsulcata albida, radiis latiusculis reticulatis fuscis quinque ad sex picta; vertice excentrico; margine integerrimo. Long. 7·4, lat. 5·7, alt. 3 lines.

Hab. Western Coast.

Allied to *P. cruciata*, Linn.

PATELLA ONYCHITIS, No. 188, p. 34.

P. testa ovata, depresso-convexa, subpellucida, concentrice striata, radiis continuis pluribus latescentibus nigris aliisque angustioribus interruptis opalinis picta; vertice excentrico-submarginali, compresso; margine integerrimo. Long. 11, lat. 9·4, alt. 3 lines.

Hab. Western Coast.

PLICATULA IMBRICATA, No. 196, p. 35.

Pl. testa cuneato-subrotunda compressiuscula, solidiuscula, fumosa, plicata; plicis distinctis simplicibus, squamis fornicatis raris imbricatis. Long. 15, lat. 14, ventr. 4 lines.

Hab. Western Coast.

[Figured by Reeve, Icon. Conch., t. 1, f. 4, as a distinct species.]

PECTEN BIFIDUS, No. 197, p. 35.

P. testa inaequivalvi, albido carneoque varia, intus carnea late limbata, radiis tredecim ad quindecim; valvæ convexæ lævis rotundato-planiusculis sulco (singulo, rarius duplici, obsoletius vel distinctus) divisis; valvæ planæ transversim striatæ rotundatis; auriculis æqualibus. Long. 2 inches 10 lines, lat. 3 inches 5 lines, ventr. 11 lines.

Hab. Western Coast.

PINNA VIRGATA, No. 204, p. 36.

P. testa elongato-cuneiformi, compressa, tenui, fulva, radiis rufo-ferrugineis virgata, obsolete costata, squamis fornicatis brevibus confertissimis, transversim seriatis muricata; margine cardinali et ventrali recto, antico oblique arcuato-truncato. Long. diam. maxim. 9 inches 6 lines, marg. card., 8 inches, lat. 4 inches 2 lines.

Hab. Western Coast.

PINNA DELTODES, No. 206, p. 37.

P. testa late cuneata, trigona, subæquilatera, compressa, corneo-fumata, transversim striata et lamellosa; lamellis planatis, appressis, cinereis; margine cardinali subflexuoso, ventrali prope umbones obsolete costulatos et squamulosus sinuoso, antice rotundato. Diam. later. et transv. 6½ inches, crass. 10 lines.

Hab. North-west Coast, near Victoria River.

CARDITA RUBICUNDA, No. 220, p. 38.

C. testa elliptico-ovata, trapezode, transversa, turgida, subepidermide fusco-fulva pallide carnea, obsolete rubro-fasciata; costis sedecim rotundatis latescentibus; anticis subcrenatis. Long. 20, alt. 13·7, crass. 10 lines.

Hab. Western Coast.

This is *C. incrassata,* Sowerby, Appendix, Tankerville Cat. 1825.

CARDITA PREISSII, No. 221, p. 38.

C. testa trapezode-ovata, transversa, subturgida, albida e fusco varia et subzonata; costis octodecim convexis: anticis eleganter annulato-crenatis, medianis posterioribus et posticis squamis sparsis fornicatis erectis muricatis. Long. 12·4, alt. 9, crass. 6 lines.

Hab. Western Coast.

[Figured by Reeve, Icon. Conch., t. 8, f. 39, as a distinct species.]

CARDITA TRIDACNOIDES, No. 222, p. 39.

C. testa ovato-trapezode, transversa, solida, flava, antice abbreviato-truncata, inferius sinuata, superius dorsato-arcuata, turgida; costis duodecim: anticis squamis obtusis brevibus incumbentibus, posterioribus squamis validis adscendentibus imbricatis. Long. 16, alt. 10, crass. 9 lines.

Hab. Western Coast.

[Angas refers this species to *Mytilicardia crassicostata,* Lamarck (*Cardita*).]

CHAMA SPONDYLODES, No. 227, p. 39.

*Ch. testa elliptico-lanceolata, longitudinali, albida sanguineo radiata, oblique eleganter costato-plicata; valva minore convexiuscula, squamis fornicatis elongatis patentibus, majore naviculari exterius angulato-carinata, hinc rudi, illinc squamis variis sparsis muricata; nate

dextrorsum versa; margine interno crenulato. Long. 10·5, lat. 6 lines.

Hab. North-western Coast.

Allied to *Chama asperella*, Lamk.

DONAX SULCARIUS, No. 235, p. 40.

D. testa subtrigono-ovata, compressiuscula, transversim striata, striis tenuissimis decussata, fulva, obscurius zonata lineis-que interruptis verticalibus picta, postice obtuse angulata transversimque sulcata; margine interno integerrimo. Long. 10·3, alt. 5, crass. 3·6 lines.

Hab. Western Coast.

[I have a *Donax* from King George's Sound, which is referrable to the above; it is allied to *D. columbella*, Lamarck, but possessing distinctive characters.]

CYTHEREA SCALARIS, No. 241, p. 42.

C. testa cordato-orbiculata, convexa, lamellis surrectis appressis confertis cincta, rufa, albido zonata et radiata; ano cordato, impresso, parvo; vulva lineari. Long. 2 inches 2 lines, alt. 1 inch 11 lines, crass. 11 lines.

Hab. North-western Coast.

[Deshayes quotes this species as *Dosinia scalaris.*]

CYTHEREA VAGINALIS, No. 246, p. 42.

C. testa ovato-orbiculata, subtrigona, convexiuscula, anterius compressa, lævi, carnea, maculis radiantibus rufis virgata; intus rosea, margine crenulato; ano lineari-lanceolato; vulva profunde impressa, patente. Long. 12, alt. 10, crass. 5 lines.

Hab. Western Coast.

[Deshayes quotes this species as *Cuneus vaginalis.*]

CYTHEREA MENSTRUALIS, p. 42.

Species vulvae impressione profunda distinctissima, singularis. Aliam huic proxime affinem speciem majorem equidem possideo necdum *quantum sciam descriptam, neque mihi innotuit unde sit; est enim haec: Cytherea menstrualis, m. testa suborbiculata, convexiuscula, anterius compressa, longitudinaliter leviter striata, obsolete decussata, livido-fusca, lineis angularibus cruentis s. lividis transversim seriatis picta; margine intus crenato; ano lineari-subulato; vulva profunde impressa, patente.* Long. 2½ inches, alt. 2 inches 3 lines, crass. 10·5 lines.

[This is also referred to *Cuneus* by Deshayes.]

VENUS GRAVESCENS, No. 247, p. 43.

V. testa cordato-trigona, turgidula, solida, ponderosa, albida, radiis tribus latis lividis picta, obsolete transversim striata, lamellis transversis validis surrectis distantibus (decem), antice incisis et in lobum s. auriculam productis cincta; margine intus crenulato; ano subrotundo-ovato; pubis oblongae depressae labiis incumbentibus. Long. 15, lat. 14, crass. 9 lines.

Hab. Western Coast.

Allied to *V. fasciata*, Donov.

[This species is referred to *Chione* by Deshayes.]

VENUS COELATA, No. 248, p. 43.

V. testa cordato ovata, fulva, radiis raris latescentibus lineisve angularibus subseriatis rufis picta, cingulis tenuibus confertissimis numerosis (*ad* 36) *cincta, interstitiis longitudinaliter porcatis; margine intus crenulato; ani lanceolati labris prominulis, compressis; pube oblongo-lineari.* Long. 6, alt. 5·3, crass. 3 lines.

Hab. Western Coast.

Has some affinity to *Venus gallina*, Linn.

[It is quoted by Deshayes as *Chione coelata.*]

MACTRA DECUSSATA, No. 261, p. 46.

M. testa elliptico-ovata, subtrigona, inaequilatera, alba, striis tenuissimis decussata, antice breviore, postice angulata, area ibidem, *medio depressa, costula verticali circumscripta, extremitate hiante.* Long. 18, alt. 13, crass. 7 lines.

Hab. Western Coast.

PISIDIUM SEMEN, No. 232, p. 40.

Testa oblique ovata, ventricosa, umbonibus turgidis, epidermide flavo-cornea, in margine pallidiore induta, subtilissime transversim striata, decosticata alba vel lilacina. Long. 1·3, alt. 1, crass. 0·7 lines.

Hab. Sandy banks of Swan River, with *Paludina granum.*

Menke's Names.	*Adopted Names.*
Cassidula rugata	Cassidula rugata, *Mke.*
Paludina granum	Assiminea ? granum, *Mke.*
Melania lirata	Melania incerta, *Brot.*
Littorina rugosa	Littorina rugosa, *Mke.*
Littorina acuta	Littorina mauritiana, *Lam.*
Natica sagittata	Natica sagittata, *Mke.*
Natica sertata	Natica sertata, *Mke.*
Phasianella Lehmanni	Phasianella bulimoides, *Lam.*
Phasianella Preissii	
Phasianella brevis	Phasianella ventricosa, *Q. & G.*
Turbo Lehmanni	Gibbula Lehmanni, *Mke.*
Monodonta melanoloma	Trochocochlea melanoloma, *Mke.*
Monodonta baccata	Euchelus baccatus, *Mke.*
Monodonta crenulata	Euchelus
Monodonta ringens	Clanculus ringens, *Mke.*
Monodonta maxillata	Clanculus
Monodonta lupina	Clanculus lupinus, *Mke.*
Monodonta turrita	Thalotia conica, *Gray.*
Monodonta apicina	Elenchus apicinus, *Mke.*
Monodonta virgata	Elenchus irisodontes, *Q. et G.*
Trochus prasinus	Trochus prasinus, *Mke.*
Trochus ciliaris	Zizyphinus ciliaris, *Mke.*

Menke's Names.	*Adopted Names.*
Trochus viridulus	Zizyphinus viridulus, *Mke.*
Trochus chlorostomus	Zizyphinus chlorostomus, *Mke.*
Trochus Preissii	Thalotia pulcherrima, *Wood.*
Trochus Lehmanni	Thalotia Lehmanni, *Mke.*
Trochus impervius	Diloma impervia, *Mke.*
Trochus vitiligineus	Monilea vitiliginea, *Mke.*
Buccinum acuminatum	Columbella Menkeane, *Reeve.*
Buccinum fasciculare	
Cassis paucirugis	Semicassis paucirugis, *Mke.*
Columbella bidentata	Columbella bidentata, *Mke.*
Tritonium tabulatum	Tritonium
Tritonium rutilum	Tritonium labiosum, *Wood.*
Fusus ventricosus	
Fusus exilis	
Conus rutilus	Conus rutilus, *Mke.*
Marginella liturata	Marginella liturata, *Mke.*
Terebra albula	Terebra (Hastula) albula, *Mke.*
Haliotis scabricosta	Haliotis excavata, *Lam.* ?
Haliotis semiplicata	Haliotis.
Fissurella oblonga	Fissurella scutella, *Gray.*
Patella insignis	
Patella onychitis	
Plicatula imbricata	Plicatula imbricata, *Mke.*
Pecten bifidus	
Pinna virgata	Pinna
Pinna deltodes	Pinna
Cardita rubicunda	Cardita incrassata, *Sow.*
Cardita Preissii	Cardita Preissii, *Mke.*
Cardita tridacnoides	Mytilicardia crassicostata, *Lam.*
Donax sulcarius	Donax sulcarius, *Mke.*
Cytherea scalaris	Dosinia scalaris, *Mke.*
Cytherea vaginalis	Cuneus vaginalis, *Mke.*
Cytherea menstrualis	Cuneus menstrualis, *Mke.*

Menke's Names.	*Adopted Names.*
Venus gravescens	Chione gravescens, *Mke.*
Venus coelata..	Chione coelata, *Mke.*
Mactra decussata	Mactra
Pisidium semen	Pisidium semen, *Mke.*

NOTES AND EXHIBITS.

Mr. Stephens drew attention to the Geological features of a Quarry at Rushcutter's Bay, and promised to read a paper in reference thereto at a future meeting.

Mr. Brazier exhibited a Tortoise with two heads found by him at the Macleay River; also on behalf of Mr. R. C. Rossiter, Noumea, New Caledonia, a malformed *Cypræa poraria*, and on behalf of Professor Tate, Adelaide, *Columbella bidentata*, and *Paludina gramma*, two of Menke's species from Western Australia, St. Vincent's Gulf, South Australia, and King George's Sound as mentioned in his paper.

Mr. Wilkinson exhibited a number of a species of *Phasma* found by him at the Fish River Caves, where they were so numerous as to have denuded nearly all the trees of foliage.

Mr. P. McMahon exhibited a section of a Maryborough Pine log in which a stone was embedded fifty or sixty feet from the ground, supposed to have been dropped into an angle of the branch when the tree was young and grown over.

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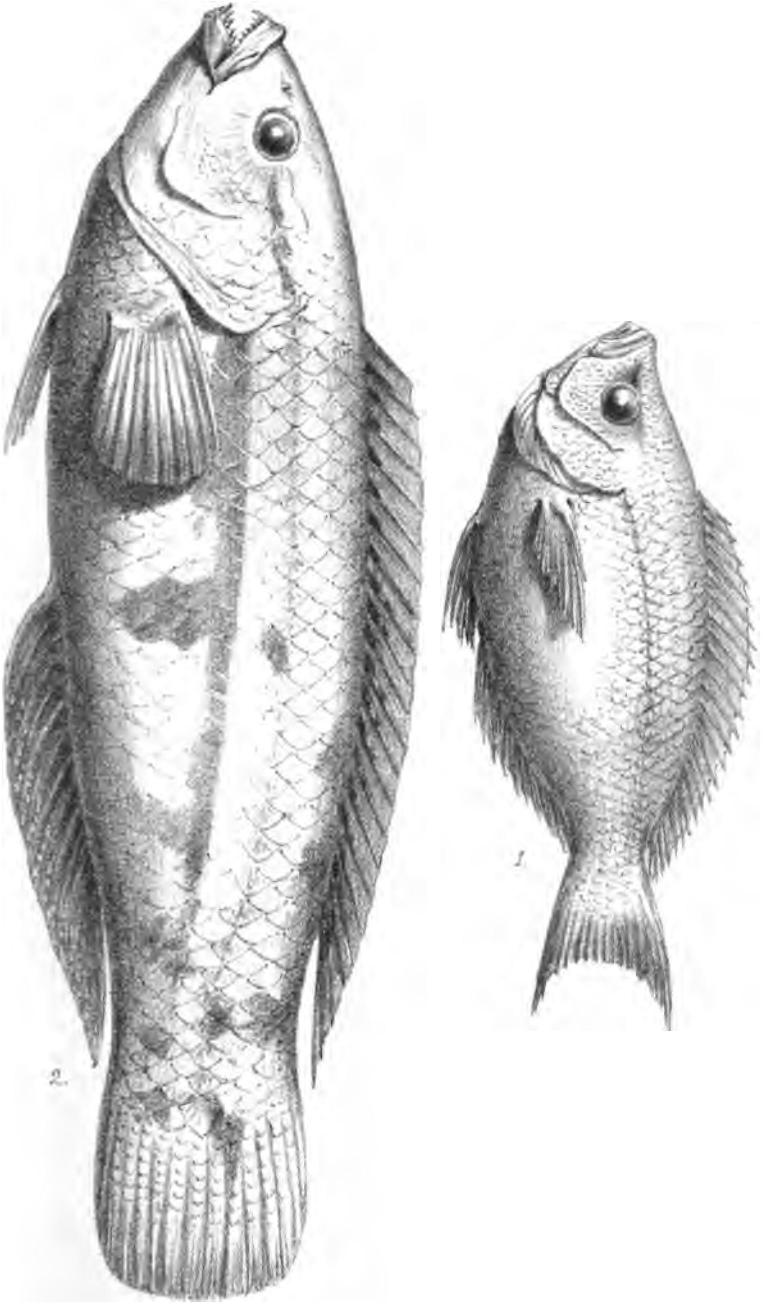
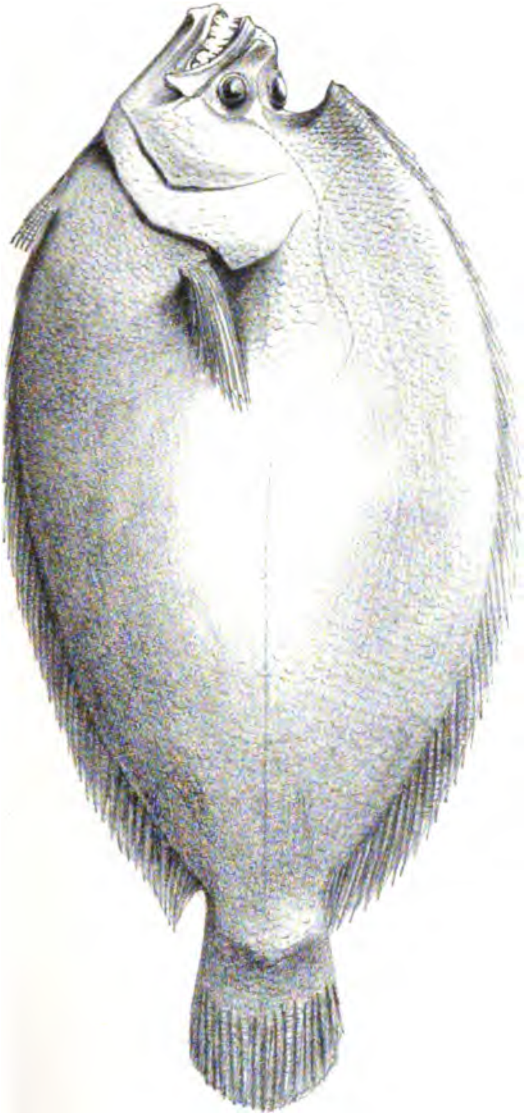


1. POMACENTRUS DOLII,
2. LABRICHTHYS LABIOSA

Macleay. S.S. del.



TERATORHOMBUS EXCISICEPS, *Macleay.*

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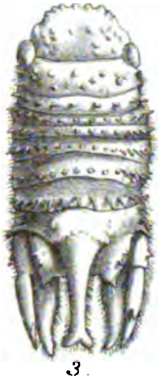

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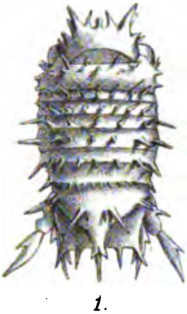

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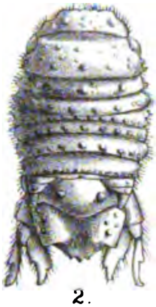

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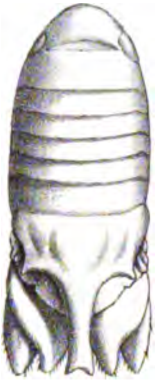

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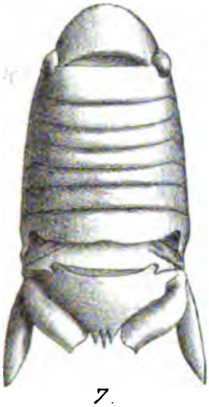

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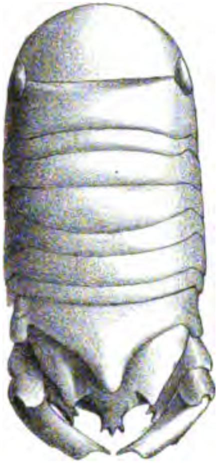

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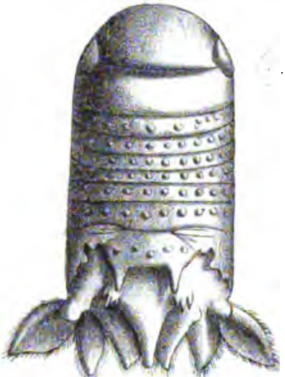

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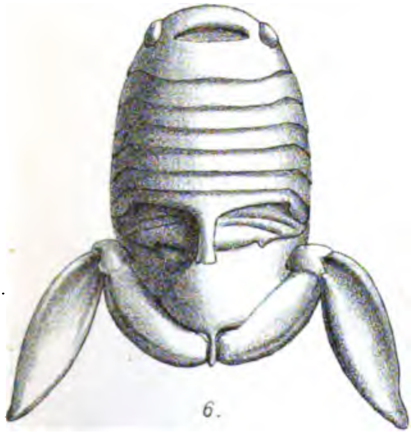

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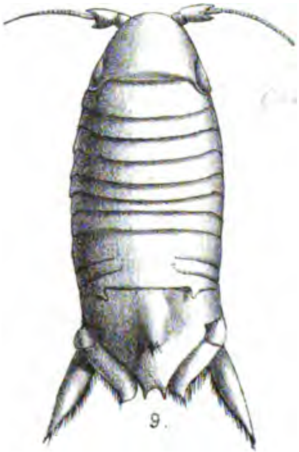

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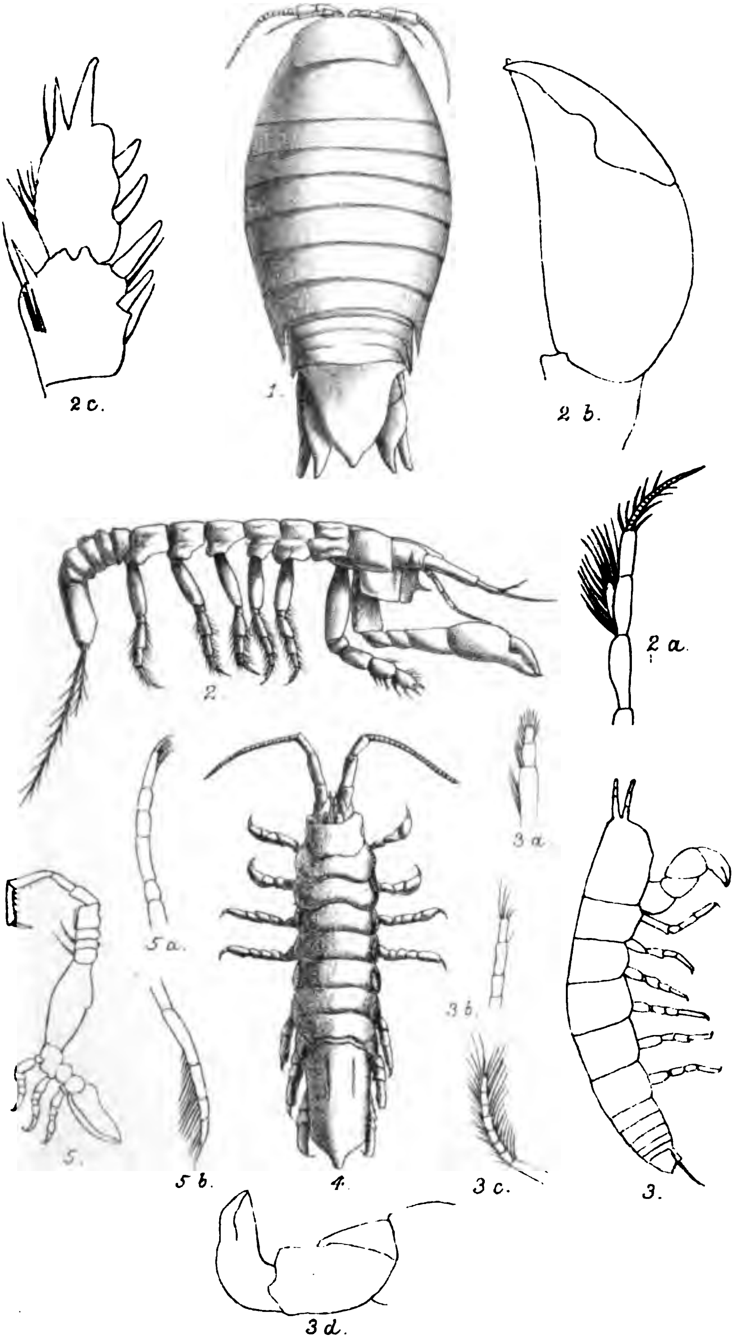

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WEDNESDAY, APRIL 27TH, 1881.

The President, Dr. J. C. Cox, F.L.S., in the Chair.

MEMBERS ELECTED.

F. B. Kingdon, Esq.; Dr. Craig Dixson; Dr. Thomas Dixson and Dr. Schuette.

DONATIONS.

Journal of the Royal Microscopical Society, Vol. I., part 1, series 2, from the Society.

Results of Rain and River observations for 1880, Recent changes in the surface of Jupiter, and Thunder and Hailstorms in N. S. Wales, from H. C. Russell, F.R.A.S.

PAPERS READ.

DESCRIPTION OF A NEW SPECIES OF AUSTRALIAN AMPLEXA.

BY PROFESSOR RALPH TATE, F.G.S., &c.

AMPLEXA TURRITA, *spec. nov.*

Shell somewhat fusiformly turreted, thin, covered with a pale horn-coloured epidermis which is squamosely raised at the sutures and on the longitudinal carinae. Whorls five and a half, with distinct sutures; body whorl carinated, obliquely flattened posteriorly, and ornamented anteriorly with about five longitudinal ridges; penultimate whorl subquadrate with two prominent keels, one on the angle of the whorl, the other near the anterior suture. External surface with transverse thick striæ of growth somewhat cancellated by the spiral ridges and intermediate lines. Spire exserted, scalariform, acute. Aperture ovate, subangulated posteriorly, about three-fifths of the length of the shell; opaque-white within; columella plait distinct, inner lip white thinly and narrowly spread over the columella, and obliterating the umbilical fissure.

Dimensions:—Length 16, breadth 7·5, length of aperture 9·5 millimetres.

Locality:—Lake Wendouree, Ballarat, Victoria.

This species is closely related to *Physa Aliciæ*, from which it differs in its narrower and less oblique form, more attenuated spire, and in the fewness of the longitudinal keels. *P. Kershawi*, T.-Woods, though belonging to the same natural group, is like *P. mæsta*, Adams, of New Zealand, and therefore makes an approach to *P. Cumingi*.

Descriptions of Australian Micro-Lepidoptera.

By E. Meyrick, B.A.

V. TORTRICINA.

In the present paper (together with the next instalment shortly to follow) I have endeavoured to create a substantial basis for the acquisition of knowledge of the *Tortricina* of Australia and New Zealand. I have identified, classified, and redescribed the species of the group indicated by Walker in the British Museum Catalogue of Lepidoptera, as well as the few others named by other writers; and have added descriptions of all the new species which I possess in my own collection. In the present instalment 103 species are described, of which 57 are new. The worthless character of Walker's descriptions is sufficiently well known; in this group, owing to the great similarity of marking and obscure colouring of the species, the great majority of his descriptions are in themselves absolutely unidentifiable, in the absence of trustworthy generic indication. The forty species of the *Tortricidæ* which he possessed from Australia and New Zealand are described by him under seventy-eight different names, one species being burdened with as many as eleven synonyms, and in no single instance has a species been correctly referred to its proper genus. I have recently examined the whole of his Australian types in the British Museum collection, and have identified almost all as species of which I possess specimens; of four or five I do not possess specimens, and in these cases I have not been able to make a sufficiently thorough investigation to make the generic identification absolutely certain, but I trust I have not made any gross errors in that respect. With regard to the retaining of Walker's names, it appears to me indisputable that it would have been perfectly justifiable to reject all names followed by descriptions which did not of themselves sufficiently indicate the species referred to. If the description is not identifiable, it is no description; the existence of the type is not to the point. If an author of the present day were to publish a list of names of new species, and observe that he had omitted to add descriptions, as the types were always on view in his collection, I presume his names would not be adopted; yet in regard to most species, what Walker has done amounts to no more. Notwithstanding, in deference to general usage, I have retained his names on the strength of the types alone; but at the same time I assert distinctly that I do not consider myself bound to do so in any instance. The rule which I have adopted (suggested to me by Prof. Fernald) has been to retain all names followed by descriptions which there appears sufficient reason to believe were really intended to represent the specimen standing in the collection as type of the species, however inadequately they may do so. If, as is not unfrequently the case, the type has been lost, then I have rejected the name entirely, unless the description clearly indicated a particular species. When the form of the name errs grossly against the elementary rules of the Latin language, I have corrected it to a more seemly shape. Prof. Zeller urges me also to change the pointless and nonsensical names which often occur for more significant titles, but though sometimes sorely tempted, I have not ventured to carry out a principle so liable to abuse.

Of other authors, Lewin, Newman, and Zeller have described one or two species each, which I have determined as far as practicable. Felder in the "Reise der Novara" has figured several species, principally from New Zealand; the figures are very poor and frequently quite unidentifiable, but all those which I have been able to determine are synonyms of species previously described by Walker. Butler has also described a few species, of which I have included those of which I have seen the types in the British Museum collection; they seem to have been invariably referred to wrong genera, after the example set by Walker, but are mostly distinct species.

The classification of the *Tortricina* has usually been regarded by European writers as a task of unusual difficulty, their knowledge being confined to the European fauna. It is true that, until the publication of the systems of Lederer and Heinemann, all schemes proposed were scientifically quite valueless. I am disposed to think, however, that the difficulty of the group has been somewhat exaggerated. The general character of the markings, colouring, and form of wing is so uniform throughout the group, and restricted within such narrow limits of variation, that the same, or an extremely similar, superficial facies often recurs in distinct genera; which has fostered an erroneous belief that the structural points of generic distinction were misleading and insufficient. Moreover the structure of the head and palpi, which in the *Tineina* affords so ready a means of classification, in the *Tortricina* presents usually but few and unimportant differences. The best generic characters are afforded by the neuration, which I have always found a very trustworthy guide; the basal pectination of the lower median vein of the hindwings, the structure of the antennæ, and the presence of a costal fold in the male, are also points on which much stress may be safely laid. In the case of the Australasian species I have found no particular difficulty in applying these means, and they have enabled me to separate the species into genera which appear to be undoubtedly natural. I should add that in the *Tortricina* the neuration can usually be clearly traced by inspection of the lower surface of the wings without denuding them of scales; a circumstance which has enabled me to fix with certainty the position of those species of which I possess only single specimens which could not therefore be spared for dissection. For the just classification of the present family *(Tortricidæ)* I have been compelled to form seventeen new genera, owing to the very strong specialisation of the fauna, many of these forms being very remote from anything previously known.

The *Tortricina* appear to me clearly separable into three well-defined families, by the following characters, viz:

1. *Tortricidæ*.—Lower median vein of hindwings not pectinated at base; vein 2 of forewings rising from before posterior third of cell.

2. *Grapholithidæ*.—Lower median vein of hindwings pectinated at base; vein 2 of forewings rising from before posterior third of cell.

3. *Conchylidæ*.—Lower median vein of hindwings not pectinated at base; vein 2 of forewings rising from posterior fourth of cell.

These families constitute assemblages of an undoubtedly natural character, and are capable of accurate limitation as above; but even were one or two exceptions to be discovered, I should not consider that the fact would invalidate the title of these groups to be regarded as families. In my view, these three families are independent branches of a common stock, and might be represented by three lines, diverging somewhat, from nearly the same point; and being distinctly separable at their origin, they need not be confused, even though one should, through analogous variation, perhaps occasionally develope the peculiar characteristic of the others. The true position will always be discernible by a consideration of the sum of the characters, rather than a blind dependence on one alone. In the present paper the *Tortricidæ* alone are included; the *Grapholithidæ* and *Conchylidæ*, which even together are much less numerous, will form the subject of the next instalment.

The *Tortricidæ* are divisible by means of the neuration into well-defined and natural groups which might, if desirable, be adopted as subfamilies, viz.:

a. *Mictoneura*—Veins 8 and 9 of forewings rising on a stalk from 7 (genus 1).

b. *Acropolitis* group—Veins 3 and 4 of hindwings separate at origin (genera 2-10).

c. *Dichelia* group—Veins 3 and 4 of hindwings from a point or stalked, 7 and 8 of forewings stalked (genera 11-16).

d. *Tortrix* group—Veins 3 and 4 of hindwings from a point, 7 and 8 of forewings separate (genera 17-21).

There are also other lower-organised groups, but they are apparently not represented in Australia, and I will not therefore attempt to define them. Assuming that the origin of the family is to be found in the extreme forms of the *Gelechidæ* (*Dasystoma* and *Chimabacche*), a direct progression may be traced from such forms as *Cheimatophila* and *Exapate* through *Sciaphila* to *Tortrix* and *Cacœcia*, with a continually increasing breadth of wing; the transition from these to *Dichelia* seems at present to be incomplete, there being no distinct indication of the steps through which veins 7 and 8 of the forewings became stalked; *Capua* is a modification of *Dichelia*, and from *Capua* are formed *Acropolitis* and *Pyrgotis* by the separation of veins 3 and 4 of the hindwings; and from these latter again are developed the more extreme forms of this type, with veins 3, 4, 5 all equidistant and parallel, and the other details of structure often considerably modified. *Mictoneura* stands at present so remote from its allies, that it is hardly possible to conjecture whence it may have originated, but perhaps from the neighbourhood of *Capua*.

The *Tortricidæ* are represented in this region at present by 103 species, two-thirds of the whole *Tortricina*, since I have altogether only about 50 native species of the other two families. In Europe, on the other hand, the *Tortricidæ* number about 145 species out of 680, little more than one-fifth of the whole. Of the 103 species hereafter described 24 are indigenous to New Zealand, and 79 to Australia, none being common to both, nor are any at present known to occur elsewhere. No European species of the family has yet been introduced, though the food-plants of many common species have been imported; amongst the *Grapholithidæ*, however, there are several introduced species.

On a general analysis of the fauna, the most striking feature appears to be the development of group *b.*, of which *Acropolitis* may be taken as the type, since this group, distinguished by a clearly-marked peculiarity of structure, is unknown elsewhere, and appears to be wholly confined to the Australian region, where it is represented at present by nine genera and nineteen species; the large proportion of distinct genera being very noticeable. Only one of these genera extends into New Zealand, where it reaches some development, being represented by at least four species, much more intimately allied to one another than to the single Australian species. Arranging the genera of this group in a natural progression by the amount of peculiarity, we find at the one end of the series forms closely approximating to *Capua*, and at the other peculiar and abnormal types, differing widely from any other group. There can be little doubt under the circumstances that the whole of this group has been developed in Australia from some original form closely resembling *Capua*, and it will probably be found to be wholly confined to this region, though it is of course possible that one or two forms may have spread outwards to other lands. A single species of this group reaching New Zealand will be sufficient to account for the ancestry of the forms at present known thence. From the large amount of generic diversification in the group, we may infer with some probability a correspondingly long period of isolation. We shall see hereafter that the *Conchylidæ* afford a quite similar instance of a peculiar group, from the characteristics of which precisely the same inferences may be drawn. In connection with the development of this group derivable from *Capua*, the predominance of *Capua* itself and its close ally *Dichelia* in the Australian region is of considerable interest. The first of these genera is represented by twelve, and the second by thirteen species, both genera extending to New Zealand; whilst in Europe and America they are very sparsely represented; in fact, of *Capua* only three other species are known. Besides these there are four other nearly allied endemic genera, including seven species; so that in fact three-fourths of the peculiar Australian genera of the family are traceable to this source; and as out of the twenty-one genera described seventeen are endemic, this disproportion is very marked.

Of the rest, the cosmopolitan genera *Tortrix* and *Cacæcia* are represented by numerous forms of no marked peculiarity; these genera are doubtless of great antiquity. *Cacæcia* is especially predominant in New Zealand, where all the species appear to belong to a special group with more elongate palpi, suggesting a limited origin. There are also three other endemic genera of this group, all moderately nearly allied to *Tortrix*, and two of them extending to New Zealand. Finally there is the very singular genus *Mictoneura*, wholly remote from all others; so far as can be judged at present, it seems probable that we have here a last surviving relic of an extinct group, possibly indicating the transition from the *Tortricina* to the *Pyralidina*.

All the characteristics of the fauna will therefore agree in indicating great isolation, and from the limitation of forms may be inferred the remoteness of the period at which the isolation began. New Zealand is distinguished by a much greater limitation of forms, but does not show any peculiar genera, or any differing from those native to Australia, though all the species are peculiar. To sum up briefly the characteristics of the representation of the *Tortricidæ* in the Australian region, it will be seen that there are (1) two genera occurring throughout the world plentifully, (2) two genera occurring plentifully here, but very scantily elsewhere, (3) three endemic genera derivable from the first two, (4) thirteen endemic genera derivable from the second two, (5) a single abnormal endemic genus representing an extinct group.

Of genera remarkable by their absence may be noticed especially *Teras* Hb., and *Sciaphila*, Tr.; these are of very general distribution, appearing to extend over most of the rest of the globe, and contain numerous species, but are neither themselves present in Australia, nor represented by allies. It seems almost certain that these are really absent, as they are freely developed and conspicuous wherever else they occur.

TORTRICINA.

Head rather rough; ocelli present; tongue short (rarely obsolete). Antennæ short. Maxillary palpi absent. Labial palpi rather stout, more or less porrected. Wings usually broad. Forewings with twelve (rarely eleven) veins, vein one furcate at base (rarely one fork obsolete). Hindwings with eight or sometimes seven veins.

FAM. I. TORTRICIDÆ.

Lower median vein of hindwings without basal pectination; vein two of forewings rising before posterior third of lower margin of cell.

The indigenous genera of this family may be tabulated as follows:

I. Veins 8 and 9 of forewings stalked .. 1. Mictoneura.
II. Veins 8 and 9 of forewings separate

A. Veins 3 and 4 of hindwings remote at origin.

1. Veins 3, 4, 5 of hindwings remote and equidistant at origin.

a. Veins 7 and 8 of forewings separate 2. Proselena.
b. Veins 7 and 8 of forewings stalked.. 4. Isochorista.

2. Vein 5 closely approximated at base to 4.

a. Forewings with 11 separate veins.. 5. Atelodora.
b. Forewings with 12 veins.

i. Veins 7 and 8 of forewings separate 3. Palæotoma.
ii. Veins 7 and 8 of forewings stalked.
*. Thorax smooth.

†. Hindwings narrower than forewings .. .. .. 6. Aristocosma.

††. Hindwings broader than forewings .. .. .. 7. Adoxophyës.
**. Thorax strongly crested.
†. Veins 6 and 7 of hindwings stalked .. .. ..10. Pyrgotis.
††. Veins 6 and 7 of hindwings separate.
‡. Palpi arched, appressed to face .. .. .. 8. Thrincophora.
‡‡. Palpi porrected .. .. 9. Acropolitis.
B. Veins 3 and 4 of hindwings from a point or short-stalked.
1. Veins 7 and 8 of forewings stalked.

a. Costa of male with basal fold.

i. Costal fold strong .. .. ..11. Capua.
ii. Costal fold very small and imperfect

* Palpi arched upwards; thorax crested.. .. .. ..13. Asthenoptycha

** Palpi porrected; thorax smooth 12. Acroceuthes.
b. Costa of male without fold.
  i. Palpi arched upwards; thorax crested .. ..14. Anatropia.
  ii. Palpi porrected; thorax smooth.
    * Anal valves of male very large, tufted .. ..15. Anisogona.
    ** Anal valves of male moderate 16. Dichelia.
2. Veins 7 and 8 of forewings separate.
a. Hindwings with a costal tuft of raised scales .. .. ..17. Cryptoptila.
b. Hindwings without tuft.
  i. Costa of male more or less strongly folded .. ..18. Cacœcia.
  ii. Costa of male without fold.
    *. Veins 6 and 7 of hindwings separate:
      †. Antennæ of male filiform, finely ciliated .. ..19. Tortrix.
      ††. Antennæ of male strongly dentate, with tufts of cilia ..21. Arotrophora.
    **. Veins 6 and 7 of hindwings stalked .. .. ..20. Dipterina.

1. Mictoneura, *n. g.*

Thorax with strong erect crest. Antennæ in male thickened, joints crowded, serrate, strongly ciliated; basal joint above with a ridge-like pointed erect tooth of scales. Palpi rather long, porrected, second joint with elongate-triangular appressed scaling, terminal joint long, cylindrical, exposed. Legs moderate, inner spurs very much longer than outer. Forewings subtriangular, dilated, costa in male simple, arched at base, thence gently arched, apex obtuse, hindmargin rather oblique, rounded. Hindwings as broad as forewings, trapezoidal, hindmargin strongly sinuate beneath apex. Forewings with veins 8 and 9 stalked, rising out of 7 near its base, vein 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 from a point, 5 approximated to 4 at base, 6 and 7 separate.

This remarkable genus is remote from all other known *Tortricina* in the type of neuration of the forewings, in which particular it resembles the typical *Pyralidina*. I think, however, that it is without doubt properly referred to its present position at the head of the *Tortricidæ*, with which family it agrees in all other structural points, though peculiar in its superficial features. It is not nearly allied to any other genus, but in general character approaches perhaps nearest to the group of which *Dichelia* is the type.

1. Mict. flexanimana, *n. sp.*

♂ ♀. 5‴-6‴. Head and palpi whitish, irregularly mixed with fuscous. Antennæ fuscous. Thorax whitish, finely irrorated with greyish-ochreous. Abdomen ochreous-grey. Legs whitish, anterior and middle tibiæ and tarsi suffused with dark fuscous, posterior tarsi infuscated at base of joints. Forewings whitish, clearer white along costa, especially at base, rest of wing crossed by regular fine straight parallel transverse fuscous strigulæ, all the veins whitish marked with numerous blackish-fuscous spots; a small blackish-fuscous rounded-triangular spot on costa in middle, darkest on edges; before it are four small equidistant black spots on costa, and beyond it on the costa and hindmargin are more indistinct blackish-fuscous spots between the veins; the costa is also minutely strigulated with fuscous throughout; the hindmargin, especially towards anal angle, and the disc and inner margin, especially before middle, are faintly and irregularly clouded with pale fuscous-grey: cilia ochreous-whitish, barred with grey opposite the veins. Hindwings grey-whitish, with fine parallel transverse grey strigulæ; cilia grey.

The general aspect of this species is very peculiar; the extreme regularity of the transverse strigulæ between the veins produces an appearance of geometrical reticulation similar to that of the webs of some spiders.

Five specimens taken at rest on fences in Sydney, from September to December.

2. PROSELENA, *n. g.*

Thorax smooth. Antennæ in male thickened, thinly and shortly ciliated. Palpi short, porrected, second joint roughly scaled above, terminal joint almost concealed. Forewings elongate, narrow, costa in male simple, gently arched, hindmargin very oblique, rounded. Hindwings elongate, broader than forewings. Forewings with veins 7 and 8 separate. Hindwings with veins 3 and 4 remote at origin and parallel, 5 equidistant from 4 and parallel, 6 and 7 long-stalked.

This genus belongs to the group in which veins 3 and 4 of the hindwings do not rise from the same point. In this group it is distinguished from all except *Isochorista* by having veins 4 and 5 of the hindwings not only widely remote at origin but parallel throughout; from *Isochorista* it differs by the separation of veins 7 and 8 of the forewings, which in *Isochorista* rise from a common stalk.

1. Pros. annosana, *n. sp.*

♂ ♀. 4¼″-5″. Head and palpi white. Antennæ greyish-ochreous. Thorax white, margins spotted with pale ochreous. Abdomen whitish-ochreous. Legs ochreous-white, anterior tarsi suffused with fuscous at base of joints. Forewings white, irregularly strewn with fine fuscous-grey scales, forming indistinct strigulæ on costa; base indistinctly spotted with ochreous; four nearly straight transverse slender ochreous fasciæ, nearly perpendicular to costa; first at one-fourth, indistinct, clearest in disc, slightly bent below costa; second in middle, slightly broader and more conspicuous than the others, somewhat bent below costa, mixed with black on costa and on lower half of its anterior edge; third at three-fourths, fainter, often interrupted; fourth subapical, slender, often mixed with black; cilia white, with a slender blackish central dividing-line. Hindwings and cilia white.

This is a peculiarly delicate and fragile-looking little species, and has more the facies of some of the *Oecophoridæ* than of a veritable *Tortrix*, and its markings are equally abnormal.

Sufficiently common where it occurs, but rather local; taken near Parramatta, New South Wales, flying gently towards sunset amongst the *Eucalyptus* bushes in dry grassy places, in September and October.

3. PALÆOTOMA, *n. g.*

Thorax smooth. Antennæ in male thickened, ciliated. Palpi long, porrected, second joint somewhat arched, with rather appressed scales, terminal joint very long, naked, horizontal. Forewings elongate, narrow, surface with raised scales; costa in male simple, nearly straight, apex rather acute, hindmargin very oblique, rounded. Hindwings elongate, broader than forewings. Forewings with veins 7 and 8 separate, closely approximated towards their origin. Hindwings with veins 3 and 4 remote at origin and parallel, 5 approximated to 4 at base, 6 and 7 stalked.

Larva sixteen-legged, producing true galls, inside which it feeds.

Distinguished from the other genera with veins 3 and 4 of the hindwings remote at origin and 12 veins in the forewings (except *Proselena)* by the separation of veins 7 and 8 of the forewings; from *Proselena* it differs by the elongate palpi, and the approximation of veins 4 and 5 of hindwings at origin. In general facies it somewhat resembles a *Sciaphila*. It is remarkable as affording an instance of a true gall-producing Tortricideous larva; and it seems not improbable that some of the allied genera may be found to have a similar larval habit.

1. Pal. styphelana, *n. sp.*

♂ ♀. 6‴-8‴. Head, palpi, antennæ, and thorax dark ashy-grey. Abdomen dark ochreous-grey. Anterior and middle legs dark fuscous-grey; posterior legs whitish, tarsi suffused with fuscous-grey at base of joints. Forewings ashy-grey, surface somewhat roughened, thinly and irregularly sprinkled with black scales, which tend to form short longitudinal strigulæ; costa with very short oblique blackish strigulæ; a strong irregular black streak from base to disc above anal angle, posteriorly attenuated, sometimes partially obsolete; a very slender blackish line from three-quarters of costa very obliquely outwards nearly to hind-margin, thence bent abruptly round to anal angle; beyond this is sometimes another similar line; a black spot on disc beyond middle, above the extremity of the basal streak: cilia pale ashy-grey, with a blackish line above base, and three other slender dark-grey lines. Hindwings fuscous-grey, darker on apex and hindmargin; cilia fuscous-grey.

The longitudinal black streak from base is generally a good characteristic of this insect.

The imago is sluggish in habit, and not commonly met with, but I have found two or three specimens at rest near Sydney, in September and January. I bred a number of specimens from the larvæ, which were not uncommon in some places in the bush near Sydney, and these all emerged in September, so that January specimens probably belong to a second generation.

Larva stout, cylindrical, not tapering; glossy whitish; head and second segment almost as broad as body, blackish. It feeds in galls on *Eucalyptus sp.;* the galls are formed on the extremity of young shoots by metamorphosis of the terminal tuft of unexpanded leaves; they are from one to two inches long, and about half an inch broad, irregular-shaped, resembling an inflated tuft of leaves but solid; the larvæ eat hollow galleries through them, ejecting the excrement through minute holes; there are generally one or two, rarely more, larvæ in each gall. Pupation takes place inside the gall, without a cocoon. The larvæ were found in July about half-grown, and the imagos appeared in September.

With regard to this and other Eucalyptus-feeding species, I may say that it is generally very difficult to identify the species of *Eucalyptus* on which they are found; the general similarity of these plants is very great, there are usually several kinds growing near together, and the larvæ are almost invariably found on young saplings which have not yet developed their specific characteristics.

4. Isochorista, *n. g.*

Thorax smooth. Antennæ in male somewhat thickened, shortly ciliated. Palpi moderate, porrected, second joint broadly scaled, rather truncate, terminal joint very short, distinct. Forewings elongate-triangular, rather narrow, costa gently arched, in male with fold towards base, hindmargin very obliquely rounded. Hindwings elongate-trapezoidal, as broad as forewings. Forewings with veins 7 and 8 stalked, vein 7 running to hindmargin. Hindwings with veins 3 and 4 remote at origin and parallel, 5 equidistant from 4 and parallel, 6 and 7 stalked.

Differs from all except *Proselena* in having veins 3, 4, 5 of the hindwings all equidistant and parallel; from *Proselena* it is at once known by having veins 7 and 8 of the forewings stalked, and by the costal fold of the male. In general superficies the imagos much resemble some of the smaller species of *Capua* and *Dichelia*.

There are two species, of which *I. panaeolana* may be known from *I. ranulana* by the presence of transverse leaden-metallic markings.

1. Isoch. ranulana, *n. sp.*

♂ ♀. 4‴-5‴. Head, palpi, and thorax dull ochreous, thinly mixed with fuscous. Antennæ whitish-ochreous, sharply annulated with dark fuscous. Abdomen greyish-ochreous, anal tuft of male ochreous-whitish. Legs ochreous-whitish, anterior and middle tibiæ with central and subapical fuscous bands, tarsi dark fuscous at base of joints. Forewings elongate, narrow, pale ochreous; costa strongly strigulated with black; basal patch represented by one or two sharply bent transverse blackish lines at one-fourth, sometimes filled up with several indistinct parallel fuscous lines; central fascia straight, moderately and evenly broad, dark fuscous-grey edged with black, running from middle of costa to anal angle, sometimes slightly dilated on lower half; a dark fuscous triangular blotch on costa before apex, connected with hindmargin above anal angle by a narrow fuscous cloudy streak, thence produced upwards along hindmargin; a short black marginal line round apex; cilia pale ochreous, clouded with greyish, and cut on middle of hindmargin by a longitudinal blackish mark. Hindwings and cilia grey.

This species is nearly allied to the succeeding, but is smaller and narrower-winged, and without the transverse leaden-metallic markings; the basal patch and central fascia are also more distinctly marked.

Rather common, though liable to be overlooked from its small size and inconspicuous colouring; it flies towards sunset in dry grassy places amongst *Eucalyptus* bushes, generally keeping near the ground. It is probably very generally distributed in New South Wales, where I have taken it at Sydney, Parramatta, Bulli, Mittagong, and Murrurundi; it occurs most commonly from August to October, but also in December and March.

2. Isoch. panaeolana, *n. sp.*

4¾‴-5½‴. ♂. Head, palpi, and thorax dark fuscous mixed with ochreous. Antennæ whitish-ochreous, strongly annulated with dark fuscous. Abdomen dark fuscous, anal tuft ochreous-white beneath. Legs dark fuscous; posterior pair whitish, base of tarsal joints dark fuscous on sides. Forewings elongate, posteriorly dilated, rather pale ochreous, irregularly mixed with numerous black scales, which tend to form irregular margins to the metallic markings, between which they also form black spots on costa; they also generally accumulate in an irregular black patch on anal angle; seven oblique transverse somewhat irregular leaden-metallic lines from costa to inner margin, indistinct towards base, the three apical lines clearest and becoming whitish on costa; between each pair as far as the sixth is an obscure leaden-metallic costal spot, only the last being distinct; between the sixth and seventh is a small round leaden-metallic spot on disc above middle; seventh line ending on hindmargin about middle; a short curved transverse leaden-metallic line immediately before apex: cilia pale ochreous at apex, becoming fuscous-grey towards anal angle, with a broad leaden-metallic basal line. Hindwings dark fuscous-grey; cilia grey, with a blackish line near base.

♀. Forewings elongate, narrower than in male, not dilated, more suffused, the leaden-metallic markings tending to coalesce in pairs, so as to leave an oblique dark basal patch, central fascia, and costal spot before apex produced to anal angle.

This species may be at once distinguished from *I. ranulana* by the leaden-metallic markings, and generally darker colouring; the male especially is also broader-winged.

Taken rather plentifully near Blackheath on the Blue Mountains, New South Wales, at a height of 3,600 feet, in October; the male flying wildly in the hot sunshine round the tops of tall *Eucalyptus* bushes, the female keeping nearer the ground. I have also a male of this species taken near Sydney nearly on the sea level, which differs only in being more suffused with smoky-fuscous, with the metallic markings broader and more obscure.

5. ATELODORA, *n. g.*

Thorax smooth. Antennæ in male serrated, shortly ciliated. Palpi moderately long, porrected, second joint triangularly scaled, terminal joint exposed. Forewings elongate-oblong, costa rather strongly arched towards base, in male simple, apex nearly rectangular, hindmargin obliquely rounded beneath. Hindwings rounded-trapezoidal, as broad as forewings. Forewings with 11 veins, all separate; vein 6 to hindmargin, 7 to costa. Hindwings with veins 3 and 4 remote at origin, 5 approximated to 4 at base, 6 and 7 stalked.

Distinguishable by the possession of only 11 veins in the forewings, the normal veins 7 and 8 being no doubt coincident. In the American *Amorbia*, Clem., (*Hendecastema*, Wlsm.) the male also has only 11 veins (the female has 12), but that genus belongs to a different group, in which veins 3 and 4 of hindwings rise from the same point, and differs besides in other characters.

1. Atel. pelochytana, *n. sp.*

♂ ♀. 5″-6″. Head, palpi, and thorax greyish-ochreous. Antennæ of male greyish-ochreous, of female whitish, annulated with dark fuscous. Abdomen whitish-ochreous. Legs ochreous-white, anterior tibiæ and tarsi dark fuscous. Forewings of male pale brownish-ochreous, of female darker, with a few transversely arranged scattered blackish scales; some small blackish marks on inner margin: cilia of male whitish-ochreous, of female brownish-ochreous. Hindwings and cilia whitish, faintly tinged with ochreous.

This species has a rather glossy appearance, and is almost unicolorous.

I received specimens of this species from Mr. G. H. Raynor, who took it not uncommonly at Deloraine in Tasmania, in December, and at Murrurundi and Waratah on the Hunter River, New South Wales, late in September, amongst mixed scrub.

6. ARISTOCOSMA, *n. g.*

Thorax smooth. Antennæ in male serrate, with a double row of long ciliations. Palpi moderate, porrected, second joint elongate-triangularly scaled, terminal joint distinct. Forewings rather triangular, costa rather abruptly arched near base, in male broadly folded towards base, apex nearly rectangular, hindmargin rather oblique, straight. Hindwings elongate-trapezoidal, narrower than forewings, apex somewhat produced. Forewings with veins 7 and 8 stalked, vein 7 running to hindmargin. Hindwings with veins 3 and 4 remote at origin, 5 approximated to 4 at base, 6 and 7 stalked.

Differs from all the genera with veins 3 and 4 of hindwings remote at base, and 7 and 8 of forewings stalked, by the narrowness of the hindwings, which are distinctly less broad than the forewings, an unusual character in the group. The long ciliations of the antennæ in the male also afford a good characteristic.

1. Arist. chrysophilana, Walk.

(*Cacœcia chrysophilana*, Walk., Brit. Mus. Cat. 315.)

♂ ♀. 6‴-6½‴. Head and palpi bright ochreous. Antennæ ochreous-whitish, annulated with dark fuscous. Thorax reddish-ochreous. Abdomen brownish-ochreous, becoming dark fuscous posteriorly. Legs ochreous-whitish. Forewings in male deep reddish-ochreous, brighter and lighter towards inner margin, in female reddish-ochreous-brown; a small semi-ovate yellowish-white blotch on middle of costa, posteriorly enclosing or cut by a small reddish-ochreous costal spot; two very irregular transverse leaden-metallic lines from costa at one-third to inner margin, sharply angulated above middle; before them are some faint metallic scales nearer base; two other brighter leaden-metallic transverse lines from the white costal blotch, very irregular, angulated, broken and interrupted beneath costa, the anterior one divided into several spots; two leaden-metallic lines from costa a little before apex, uniting shortly below costa and thence continued to hindmargin above anal angle; a leaden-metallic apical mark, sometimes separated into three spots: cilia yellowish-white, on anal angle ochreous. Hindwings yellow, apical third blackish-fuscous, hindmargin very narrowly dark fuscous; cilia dark fuscous.

This beautiful and richly-coloured species has some general resemblance to such species as *Teras holmiana* and *Tortrix bergmanniana*, but is very different in structure; the yellow hindwings are a noticeable point.

I have two specimens, and have seen three others, taken near Sydney and Parramatta, New South Wales, from August to October, flying in the afternoon sunshine or beaten from mixed scrub in rocky places. Walker's specimen is also from Sydney.

7. ADOXOPHYES, *n. g.*

Thorax smooth. Antennæ in male thickened, shortly ciliated. Palpi moderate, porrected, second joint triangularly scaled, terminal joint distinct. Forewings oblong, costa rather strongly arched towards base, in male with a broad basal fold, apex rectangular, hindmargin hardly oblique, rounded. Hindwings rounded-trapezoidal, broader than forewings. Forewings with veins 7 and 8 stalked, 7 running to hindmargin, 3 rising from before lower angle of cell. Hindwings with veins 3 and 4 remote at origin, 5 approximated to 4 at base, 6 and 7 stalked.

This genus comes near the following *Acropolitis*, from which the best distinction seems to lie in the absence of the thoracic crest; the antennæ of the male are also much less strongly ciliated, and veins 6 and 7 of the hindwings are stalked. From *Aristocosma* it is separated by the much broader hindwings.

1. Adox. heteroidana, *n. sp.*

♂. 6‴-7‴. Head, palpi, antennæ, and thorax pale ochreous. Abdomen and legs whitish-ochreous. Forewings short, broad, pale whitish-ochreous, irrorated with ochreous; costa faintly strigulated with ochreous; basal patch indicated by several faintly darker transverse lines; an irregular somewhat oblong fuscous or dark fuscous blotch on inner margin before middle, uniting with the indications of a basal patch; central fascia irregular, very oblique, running from costa slightly before middle to anal angle, moderately broad, contracted below costa, ochreous-brown or reddish-ochreous, mixed with dark fuscous on inner margin, its anterior edge distinct, angulated below middle, posterior edge suffused except on costa; apex within a very oblique line from two-thirds of costa to middle of hindmargin ochreous-brown mixed with paler towards hindmargin; cilia ochreous-whitish. Hindwings whitish, tinged with ochreous posteriorly.

♀. 10″-11″. Head, palpi, and thorax brownish-ochreous. Antennæ pale ochreous, obscurely annulated with fuscous. Abdomen pale ochreous. Forewings longer than in male, hindmargin rather sinuate beneath apex; pale brownish-ochreous, thickly irrorated with darker, with ochreous-brown markings similar to those of male, but almost wholly suffused and very indistinct except on costa and inner margin: cilia ochreous-brown at apex, becoming whitish-ochreous at anal angle. Hindwings whitish-yellow, becoming deeper yellow posteriorly; cilia yellow-whitish.

This species has a strong superficial resemblance to some of the typical species of *Cacœcia* and *Pandemis*, and the sexual differences are similar to those which commonly occur in those genera, but the type of neuration is wholly different.

I took four specimens (two males, two females) in the dense subtropical scrubs near Rosewood, Queensland, in September; they were beaten out of the thick vegetation characteristic of the volcanic soil in those districts.

8. THRINCOPHORA, *n. g.*

Thorax with erect crest. Antennæ in male ciliated. Palpi moderate, arched upwards, appressed to face, roughly scaled beneath. Forewings oblong, costa arched towards base, in male with broad basal fold, apex rectangular, hindmargin rather obliquely rounded. Hindwings rounded-trapezoidal, broader than forewings. Forewings with veins 7 and 8 stalked, vein 7 running to hindmargin. Hindwings with veins 3 and 4 remote at origin, 5 approximated to 4 at base.

Nearly allied to *Acropolitis*, from which it only differs in the palpi, which are arched upwards and appressed to the face, rising nearly to the level of the crown, whilst in *Acropolitis* they are straight and horizontally porrected. This difference is well marked and apparently sufficient for generic distinction; but I have not been able to make a thorough examination of the characters of this genus, for want of specimens.

1. Thrine. impletana, *Walk.*

(*Tortrix impletana*, Walk., Brit. Mus. Cat. 331.)

♂ ♀. 12"-15". Head and thorax cinereous-grey. Forewings cinereous-grey, irrorated and strigulated with blackish-grey; outer edge of basal patch represented by a black line from one-fifth of costa to one-fourth of inner margin, somewhat angulated in middle; central fascia narrow, cloudy, dark grey, black-margined, from costa before middle, reaching half across wing, the black margins continued thence to meet inner margin (first before middle, second in middle) as slender black lines; a short cloudy grey streak from middle of costa; a cloudy grey triangular costal blotch about three-fourths, black-margined, its apex reaching more than half across wing, its margins thence confluent and produced as a black line to anal angle; a slender grey black-margined streak from costa before apex to hindmargin above anal angle. Hindwings grey, paler towards base, spotted with darker.

The above description is taken from the original types in the British Museum, and is necessarily not quite complete, but I think it is a sufficient diagnosis of the species. Walker's own description is extremely cursory, and evades describing the markings at all.

I have not taken this species, and know of no other specimens but the original types; two of these are stated to be from Tasmania, the third from "Australia," which probably means Tasmania in this case.

9. ACROPOLITIS, *n. g.*

Thorax with large double crest. Antennæ in male thickened, serrate, strongly biciliated. Palpi moderately long, straight, porrected, second joint triangularly scaled, terminal joint distinct. Forewings oblong, costa in male broadly folded and bent before middle, in female evenly arched at base, thence nearly straight, apex rectangular, hindmargin obliquely rounded. Hindwings rounded-trapezoidal, broader than forewings. Forewings with veins 7 and 8 stalked, 7 running to hindmargin. Hindwings with veins 3 and 4 rising apart, 5 closely approximated at base to 4 or rising from the same point with it, 6 and 7 separate (in *A. signigerana* stalked).

This genus forms the type of the group to which *Adoxophyes*, *Thrincophora*, *Pyrgotis*, and (less intimately) *Aristocosma* belong; characterised by veins 3 and 4 of hindwings rising apart but near together, 5 closely approximated to 4, forewings with veins 7 and 8 stalked, and broad costal fold in male. From *Adoxophyes* and *Aristocosma* it differs in the crested thorax, from *Thrincophora* in the straight porrected palpi; it is very near to *Pyrgotis*, and the only points of distinction that I have been able to define lie in the more oblong forewings, and the separation of veins 6 and 7 of hindwings, to which latter character *A. signigerana* presents an exception; but the genera are readily separated by superficial characters, and I think will be found capable of definition.

The species are mostly rather large and well-marked insects, having commonly a longitudinal black dash in the disc of forewings, and resemble some of the larger species of *Capua*, to which the genus is in fact nearly allied. In habit they are sluggish, and they appear to be rather restricted in distribution, and not generally plentiful.

The six species known to me may be analytically arranged as follows:

A. Thorax white .. ..2. magnana.
B. Thorax whitish mixed with dark scales.
  1. Forewings white, transversely strigulated with grey .. ..1. canana.
  2. Forewings whitish, densely irrorated with grey.
    a. Forewings elongate; veins 6 and 7 of hindwings stalked .. .. ..6. signigerana.
    b. Forewings short and broad .. ..4. passalotana.
C. Thorax greyish-ochreous .. .. ..5. lignigerana.
D. Thorax dark fuscous .. ..3. dolosana.

1. Acrop. canana, *Walk.*

(*Tortrix canana*, Walk., Brit. Mus. Cat. 331.)

♂ (?). about 11″. Head and thorax whitish, irrorated with grey. Forewings white, with numerous slender irregular transverse fuscous-grey strigulæ; outer edge of basal patch represented by an oblique blackish transverse line about one-fifth rather angulated in middle, apex of angulation connected with a short longitudinal blackish line in disc below middle; central fascia represented by a grey black-margined spot on costa before middle, and a grey oblique streak on inner margin about two-thirds, not reaching half across wing; beyond these is a small grey blotch in disc above middle, margined beneath by a short black longitudinal line; a grey triangular blotch on costa towards apex, its apex expanded into a small irregular spot reaching half across wing, and black-margined; an elongate cloudy-grey streak near hindmargin above anal angle. Hindwings whitish-grey, darker at apex.

Allied to *A. magnana,* but distinguishable by the white ground-colour of the forewings, and the grey irroration of the thorax, as well as by the differences of detail in the markings, and the absence of any ochreous tinge in the hindwings.

Described from Walker's original type in the British Museum Collection, which is the only specimen that I have seen; it is stated to be from Moreton Bay, Queensland. Walker's description is wholly insufficient for identification.

2. Acrop. magnana, Walk.

(*Tortrix magnana,* Walk., Brit. Mus. Cat. 330.)

♂ 11‴-11½‴, ♀ 11‴. Head dark fuscous, mixed with white on crown and behind. Palpi dark fuscous, internally white. Antennæ dark fuscous. Thorax white, anteriorly suffused with dark fuscous. Abdomen pale ochreous. Legs ochreous-whitish; anterior tibiæ dark fuscous with two whitish rings, tarsi dark fuscous with slender whitish rings at apex of first two joints; middle tibiæ with two oblique dark fuscous bands, tarsi dark with whitish rings at apex of joints. Forewings broad, costa moderately arched, hindmargin strongly bowed outwards; fuscous mixed with darker; costa strigulated with dark fuscous; a very irregular broad transverse whitish band about one-third, clouded with pale fuscous and coarsely sprinkled with blackish, very strongly angulated outwards a little above middle, broadly and irregularly dilated on inner margin; the enclosed basal patch is irregularly spotted with black; beyond this band is a small blackish costal spot, and in the centre of the disc is a broad (in female very narrow) linear longitudinal black mark, its base resting on the lower side of the angulation of the band, its margins gradually suffused into the ground-colour, its apical extremity concave, followed by a few whitish scales; a somewhat curved blackish line from two-thirds of costa to anal angle, preceded by a rather broad irregular band, of which the upper half is hardly paler than the ground-colour, the lower half white shading rapidly into ground-colour except posteriorly, so as to leave an obscurely defined oval patch; an irregular narrow subapical white band from middle of hindmargin nearly to costa before apex, dilated above, rather sharply margined with dark fuscous, and containing several fuscous scales: cilia with basal third barred with dark fuscous and white, remainder greyish-ochreous. Hindwings pale greyish-ochreous, spotted obscurely with darker, hindmargin narrowly dark ochreous-grey; cilia whitish-ochreous with an ochreous-grey parting-line.

Broader-winged than the other species of the genus, and readily known by the white markings on a dark ground, and the ochreous tint of hindwings; it is a handsome and very distinct species.

I took five specimens (four males, one female) at rest on a fence during a high wind, near Sydney, in October. Walker's type is also from Sydney; his description, though incomplete, is quite recognisable.

3. Acrop. dolosana, *Walk.*

(*Tortrix dolosana,* Walk., Brit. Mus. Cat. 331).

♂. 10″. Head, palpi, antennæ, and thorax dark fuscous. Abdomen greyish-ochreous. Legs greyish-ochreous, anterior tibiæ and tarsi dark fuscous. Forewings moderate, costa somewhat bent before middle; dull greyish-fuscous, costa obscurely strigulated with dark fuscous; an irregular dark fuscous blotch in middle of disc, extending to costa, becoming longitudinally blackish in the centre, anteriorly sharply margined, elsewhere suffused into ground-colour; connected with the anterior edge of this blotch below middle is a short linear, anteriorly sharply dilated, black mark; nearer base are two or three small irregular blackish spots; a dark fuscous irregular line from a little beyond middle of costa to anal angle, rather concave and distinct anteriorly, posteriorly suffused; between it and central blotch is a short black longitudinal streak in middle of disc; beyond the oblique line are two or three obscure dark fuscous transverse lines from costa, uniting with it: cilia greyish-fuscous, barred with dark grey, and with a slender black waved basal line. Hindwings fuscous-grey, cilia rather darker, with a dark basal line.

♀. 13‴. Forewings rather abruptly arched near base, dull greyish-fuscous indistinctly clouded with darker; markings as in male but very suffused and indistinct, central blotch obscured, black longitudinal streaks before and beyond middle slender but clearly perceptible. Hindwings more ochreous-tinged than in male.

Recognisable in both sexes by its dark and suffused colouring. Described from my own specimens, the identity of which with Walker's species is not absolutely assured; Walker's type is a single female (one of the *Geometrina* has been subsequently added as a second example), of which the forewings appear to be somewhat roughened with raised scales, and more blackish-tinged; but in the absence of sufficient material I think it will be best to consider the specimens as forming only a single species.

I have two specimens (male and female) taken near Melbourne by Mr. G. H. Raynor. Walker's specimen is from Tasmania.

Note.—I have another female of this genus (also from Melbourne), which may either be a variety of the above, or a new species; it is smaller (11½‴) but similar in shape, the forewings more variegated with lighter fuscous and ochreous, the hindwings pale ochreous spotted with grey, with dark grey hindmargin.

4. Acrop. passalotana, *n. sp.*

♀. 9‴. Head, palpi, and thorax whitish mixed with fuscous. (Antennæ broken.) Abdomen pale ochreous, whitish on sides. Legs whitish, anterior tibiæ and tarsi banded with dark fuscous. Forewings short and broad, costa rather strongly arched towards base; whitish, closely irrorated with greyish-fuscous, especially towards apex; costa and inner margin marked with small dark fuscous spots; an irregular outwardly curved transverse dark fuscous line near base; a subquadrate dark fuscous spot on costa before middle; a strong black longitudinal mark in middle of disc, sharply margined above and in front, beneath bordered by a small dark fuscous blotch; from its posterior extremity proceed two irregular obscure blackish lines to costa between middle and three-fourths, enclosing a suffused fuscous blotch, and a sharper black waved line to anal angle, anteriorly margined with fuscous: cilia fuscous mixed with whitish. Hindwings grey, darker towards apex, and indistinctly mottled with darker; cilia grey, with a darker basal line.

This insect appears so distinct, that it is worth describing even in the absence of the male, which has doubtless special differences. It differs from the female of all other species in the genus by the comparative shortness and breadth of the forewings, and the strength and conspicuousness of the longitudinal black discal streak.

I took one specimen in the bush-clad ranges near Toowoomba, Queensland, about 2,000 feet above the sea, in September.

5. Acrop. lignigerana, *Walk.*

(*Pædisca lignigerana*, Walk., Brit. Mus. Cat. 380.)

♂. 10½″-12½″. Head, palpi, and thorax greyish-ochreous, irrorated with darker. Antennæ ochreous-fuscous. Abdomen ochreous. Legs whitish-ochreous, anterior and middle tibiæ and tarsi broadly banded with dark fuscous. Forewings moderate, costa somewhat bent about middle; whitish-ochreous irrorated with fuscous, becoming whitish at apex and above anal angle; costa and inner margin very shortly strigulated with blackish; a small erect whitish tuft on inner margin at one-fourth; a small oblique dark fuscous blotch on costa at one-fourth; a slender irregular, more or less interrupted, blackish longitudinal line from centre of disc to hindmargin above middle, beneath posterior part of which is a slenderer parallel similar line; a subquadrate dark fuscous blotch below middle of disc, its upper edge parallel to the blackish line, lower edge suffused; connected with its anterior edge is a short irregular longitudinal dark fuscous mark, and the basal portion of wing is obscurely spotted with fuscous; a suffused triangular dark fuscous blotch on costa at three-fourths, its apex connected with a roundish dark fuscous blotch before middle of hindmargin; a small elongate dark fuscous blotch on hindmargin above middle: cilia ochreous-whitish, barred with dark fuscous. Hindwings fuscous-grey, cilia whitish with a grey basal line.

Nearly allied to the succeeding *A. signigerana*, but larger and more ochreous-grey, and without the distinct ochreous discal patch of that species in the male. Walker's type is poor, but appears to be really this species; his description is inadequate.

I have two specimens (males) sent by Mr. G. Barnard from Coomooboolaroo, near Duaringa, Northern Queensland; Walker's specimen is from Moreton Bay, Queensland.

6. Acrop. signigerana, *Walk.*

(*Tortrix signigerana*, Walk., Brit. Mus. Cat. 332; *Sciaphila rudisana*, ibid. 349; *Penthina indecretana*, ibid. 377.)

♂. 8‴-10½‴. Head, palpi, and thorax whitish mixed with ashy-grey and black scales, shoulders tinged with ochreous. Antennæ dark fuscous. Abdomen ochreous-grey. Legs whitish, anterior and middle tibiæ and tarsi banded with blackish. Forewings rather elongate, costa somewhat bent before middle; whitish, thickly strewn with ashy-grey and dark fuscous scales; costa indistinctly strigulated with dark fuscous; a small ochreous basal spot beneath costal fold, and an ochreous spot on inner margin near base; some irregular fuscous spots about one-third;

a strong sharply-defined black longitudinal mark in middle of disc, its anterior extremity connected with an oblique dark fuscous streak running to costa at one-third, and also produced a little beneath towards inner margin; above the black mark is a suffused ochreous patch; below it is a fuscous-grey cloud, suffusedly continued to anal angle; a cloudy fuscous-grey triangular blotch on apical third of costa, from apex of which proceeds a very irregularly waved cloudy-grey streak to hindmargin above anal angle; a small elongate cloudy-grey blotch on middle of hindmargin: cilia whitish, basal third separated by an interrupted dark fuscous line and barred with dark fuscous. Hindwings fuscous grey; cilia fuscous-grey, extreme tips and base whitish.

♀. 11½″. Forewings with costa moderately arched near base; markings as in male, but the ochreous tints generally replaced by grey, central black mark extremely slender, basal patch more distinctly but very irregularly indicated. Hindwings slightly paler than in male, spotted with darker.

The narrowest-winged species of the genus, distinguished by its ashy-grey tints and the ochreous discal patch of the male; it also has veins 6 and 7 of hindwings stalked, and therefore approximates to *Pyrgotis*, but is too intimately allied to the preceding species to be separated from it.

Tolerably common and generally distributed; I have usually found it at rest on tree-trunks. It occurs at Sydney and Parramatta, at Melbourne, and at Helidon in Queensland; from September to November.

The types of Walker's descriptions quoted above are all referable to this species; that of *Sciaph. rudisana* is much worn, the others are normal.

10. PYRGOTIS, *n. g.*

Thorax with large broad erect crest. Antennæ in male thickened, strongly ciliated. Palpi moderate, porrected, second joint shortly triangular-scaled, terminal joint distinct. Forewings triangular, posteriorly much dilated, costa in male with broad basal fold, hardly arched, not bent, apex rather produced, hindmargin sinuate. Hindwings rounded-trapezoidal, broader than forewings. Forewings with veins 7 and 8 stalked, 7 running to hindmargin. Hindwings with veins 3 and 4 separate at origin but very near together, 5 closely approximated to 4 at base, 6 and 7 stalked.

Nearly allied to *Acropolitis*, but veins 6 and 7 of hindwings are always stalked, the costa of forewings is hardly bent in the male, the apex is always more or less produced and the hindmargin sinuate beneath it, whilst in *Acropolitis* the apex is rectangular.

The species are rather brightly coloured with ochreous or ferruginous tints.

I am acquainted with one Australian species, and four from New Zealand, which may be thus tabulated :

A. Forewings reddish-ochreous, with two dark ferruginous dorsal spots .. .. ..1. insignana.
B. Forewings pale ochreous with dark fuscous fascia and markings.
  1. An inwardly oblique streak from costa at three-fourths, meeting central fascia ..2. plagiatana.
  2. A small sharply defined dark spot on costa at three-fourths.
    a. Cilia of forewings ochreous .. ..4. conditana.
    b. Cilia of forewings dark fuscous .. ..3. gavisana.
C. Forewings greyish-ochreous, shading into dark reddish-brown posteriorly .. .. ..5. porphyreana.

1. Pyrg. insignana, *n. sp.*

♂ ♀ . 6″. Head, palpi, and antennæ reddish-ochreous. Thorax deep reddish-ochreous, crest large, dark ferruginous. Abdomen ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi broadly banded with dark fuscous. Forewings triangular, costa very slightly arched, apex somewhat produced, hindmargin sinuate, slightly oblique; dark reddish-ochreous, somewhat deeper towards base and inner margin; two small sharply-defined dark ferruginous spots on inner margin, first rather near base, semiovate, second in middle, acute-triangular, erect, reaching nearly half across wing, slenderly margined with pale yellowish; cilia dark reddish-ochreous, with a blackish apical line. Hindwings in male grey-whitish, tinged with pale reddish-ochreous, except at base, in female light ochreous-grey; cilia whitish, with a grey basal line.

This, the only Australian representative of the genus, is very distinct in markings, and could not be confused with any other known species of the group.

I have three specimens (two males, one female) taken at Blackheath in the Blue Mountains, New South Wales, at an elevation of 3,600 feet, and near Brisbane; I have also seen a specimen from near Melbourne. These were taken in September and October, and (probably a second generation) in March, flying in the afternoon sunshine amongst *Eucalyptus* scrub.

2. Pyrg. plagiatana, *Walk.*

(*Conchylis plagiatana*, Walk., Brit. Mus. Cat. 370; *Conchylis recusana* ibid. 371; *Grapholitha punana*, Feld., Reis. Nov., pl. cxxxvii, 43; ? *G. xylinana*, ibid. 44.)

♂. 7‴-8½‴. Head, palpi, and antennæ ochreous-grey-whitish, palpi beneath mixed with dark fuscous. Thorax grey-whitish, irregularly suffused with ochreous; crest large, dark brownish-ochreous, in front mixed with black. Abdomen whitish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi suffused with dark smoky-fuscous. Fore-wings triangular, costa hardly arched until just before apex, apex rather strongly produced, hindmargin oblique; whitish, more or less (sometimes wholly) suffused with pale ochreous, becoming darker towards inner margin; an ochreous-fuscous or dark fuscous angulated fascia close to base, starting obliquely from one-sixth of costa, sharply angulated in middle, ending at one-fifth of inner margin, the upper portion often partially obsolete; costal fold ochreous; costa irregularly strigulated with dark fuscous; inner margin often obscurely suffused with dark fuscous, especially towards base; a straight oblique rather narrow ochreous-fuscous or dark fuscous fascia from one-third of costa to inner margin a little before apex, dilated and enclosing a small pale spot on costa, thence straight and uniting with the other fascia below middle of wing, so as to enclose a large pale costal triangle; a broad irregularly oval fuscous blotch almost on hindmargin above anal angle, darkest above, sometimes uniting with extremity of second oblique fascia; a short dark fuscous irregular streak from apex close to hindmargin: cilia rather pale ochreous, with two slender grey-fuscous lines near base. Hindwings whitish, faintly tinged with ochreous at apex, spotted with grey, especially towards base and inner margin; cilia whitish.

A variable species, differing much in the intensity of colouring, but generally to be known by the tolerably well-defined pale costal triangle enclosed by the fuscous fasciæ; it has also a more variegated appearance than the two following species, to which it is nearly allied.

The species appears to be common and generally distributed in New Zealand; I took it plentifully near Dunedin in January, and also at Christchurch and Wellington; and one of Walker's types is from Auckland; it occurs amongst ordinary bush. All my specimens are however males, and I have not met with the female; the types described by Walker are ordinary varieties.

3. Pyrg. gavisana, *Walk.*

(*Pandemis gavisana,* Walk., Brit, Mus. Cat. 312; *Conchylis marginana,* ibid. 371.)

♀. 6‴-8‴. Head and thorax pale ochreous. Abdomen ochreous-whitish. Forewings moderate, costa rather arched towards base, somewhat sinuate beyond middle, apex somewhat produced, hindmargin rather oblique; pale ochreous; central fascia oblique, dark ochreous-brown, starting from costa before middle, reaching half across wing, its anterior edge thence obscurely produced to inner margin before anal angle; a small triangular dark ochreous-fuscous blotch on costa about three-fourths; cilia dark fuscous, extremities pale. Hindwings whitish.

Described from Walker's types, which are the only specimens I have seen. The species appears to be really distinct; it may be at once known from the preceding and following by the conspicuously contrasted dark fuscous cilia of the forewings. The locality of the two specimens is merely given as New Zealand.

4. Pyrg. conditana, *Walk.*

(*Teras conditana*, Walk., Brit. Mus. Cat. 306.)

♂. 10‴. Head and thorax pale ochreous. Abdomen grey-whitish. Forewings moderate. apex somewhat produced, hindmargin rather oblique; light brownish-ochreous; central fascia rather broad, irregular, oblique, dark fuscous, upper half clearly marked, lower half suffused and indistinct; a small flattened semi-oval blotch on costa about three-fourths; cilia light ochreous. Hindwings whitish, faintly ochreous-tinged, scantily spotted with grey.

I have only seen Walker's type; it is possible that it may be the male of the preceding species, but the ochreous cilia and differently shaped costal spot seem to afford sufficient grounds for distinction. The type is stated to be from Auckland, New Zealand, and is in very poor condition.

5. Pyrg. porphyreana, *n. sp.*

♂. 7‴. Head and antennæ whitish-ochreous. Palpi rather long, purple-fuscous, internally whitish. Thorax pale ochreous, irrorated with fuscous on margins. Abdomen pale ochreous. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused with dark fuscous except at apex of joints. Forewings triangular, costa slightly bent before middle, apex very slightly produced, hindmargin oblique; light greyish-ochreous at base, becoming ochreous in middle, shading into dark reddish-ochreous-brown along hindmargin, where it appears to form a broad suffused band; the whole surface of the wing is strewn with numerous small obscure spots of pale leaden scales; costal fold dark fuscous; costal edge very narrowly white from extremity of fold to a little before apex: cilia reddish-ochreous-brown, at anal angle fuscous-grey, extremities white. Hindwings whitish-grey, spotted with darker grey, apex darker; cilia whitish-grey, with a darker basal line.

A very distinct species; I took one specimen amongst scrub near Wellington, New Zealand, in January.

11. Capua, Steph.

Thorax smooth, or slightly crested. Antennæ in male thickened, somewhat dentate, strongly ciliated. Palpi moderate or rather long, straight, porrected, second joint triangularly scaled. Forewings short, subtriangular, costa in male with broad basal fold, bent before middle, thence nearly straight, hindmargin oblique, hardly rounded; in male often with an expansible tuft of hairs beneath costal fold. Hindwings rather elongate, broader than forewings. Forewings with veins 7 and 8 stalked, vein 7 running to hindmargin. Hindwings with veins 3 and 4 from a point or short-stalked, 5 moderately approximated to 4 at base, 6 and 7 stalked.

This genus forms the type of a group characterised by veins 3 and 4 of hindwings rising from the same point, 7 and 8 of forewings springing from the same stalk, and the presence of the costal fold in the male. It differs from the other Australian members of the group, *Asthenoptycha* and *Acroceuthes*, in the breadth and completeness of the costal fold, which in those genera is very short and imperfect; from the North American *Platynota* in the absence of tufts of raised scales on the forewings; from the South American *Cerorrhineta* in the shorter palpi and absence of scaly dilation of the antennæ.

The species are mostly rather small insects, and usually of sombre colouring; some are very plentiful and of general occurrence. In superficial features they bear a close analogy to *Dichelia*, which genus only differs by the absence of the costal fold in male.

There is only one European species; two have been described from North America, and I have ten Australian and two New Zealand species, which are hereafter described. These latter may be thus distinguished:

A. Forewings yellow, with two perpendicular blackish fasciæ .. ..12. plathanana.
B. Forewings pale whitish-ochreous.
  1. Head whitish.ochreous.
    a. Forewings with a dark fuscous longitudinal streak above fold .. .. 4. hemicosmana.
    b. Forewings without a dark fuscous longitudinal streak .. .. .. 2. decolorana.
  2. Head blackish-fuscous .. .. .. 3. vacuana.
C. Forewings white .. ..11. scutiferana.
D. Forewings grey-whitish, irrorated with darker.
  1. Markings dark fuscous, black-margined 5. melancrocana.
  2. Markings suffused fuscous-grey.. .. 1. aoristana.
E. Forewings grey-whitish coarsely irrorated with ochreous-reddish .. .. .. 6. montanana.
F. Forewings brownish.
  1. With pale greyish-ochreous space beneath costal fold .. ..10. obfuscatana.

2. Without pale greyish-ochreous space beneath costal fold.
   - *a.* Basal patch darker than ground-colour 9. **sordidatana.**
   - *b.* Basal patch not darker, only outer edge indicated.
     - i. Face dark fuscous .. .. .. 7. **chimerinana.**
     - ii. Face pale ochreous .. .. .. 8. **semiferana.**

1. Cap. aoristana, *n. sp.*

♂. 6¼″-6½″. Head, palpi, and thorax ochreous-grey-whitish, mixed with darker. Palpi elongate, more than twice as long as head, irrorated on sides with dark fuscous. Antennæ grey-whitish, slenderly annulated with dark fuscous. Abdomen greyish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi suffused with dark fuscous-grey above. Forewings posteriorly dilated, rather broad, costa moderately arched, somewhat bent before middle, hindmargin nearly straight, rather oblique: ochreous-whitish, thinly irrorated with whitish-grey; costa and inner margin obscurely strigulated with fuscous-grey; basal patch represented by an obscure ochreous-grey or fuscous-grey outwardly oblique streak from one-third of inner margin, reaching more than half across wing; central fascia suffused, obscure fuscous-grey, only distinct on costa, moderately narrow, straight, running from middle of costa to inner margin before anal angle; an irregular obscure brownish-grey cloud on costa at three-fourths, suffusedly produced nearly to anal angle; cilia ochreous-whitish, with a slender dark grey line near base. Hindwings grey, faintly spotted with darker, apex darker; cilia whitish-grey, with a darker basal line.

This species has an indistinct and faded appearance, from the faintness of its markings, but does not approach very nearly to any other, being further distinguished by the elongation of its palpi; in form of wing it is very similar to *Pyrg. porphyreana.*

I took two males at Wellington, New Zealand, amongst forest growth in January; and later another at Auckland.

2. Cap. decolorana, *Walk.*

(*Grapholita decolorana*, Walk., Brit. Mus. Cat. 392.)

♂ ♀. 6‴-6½‴. Head, palpi, antennæ, thorax and abdomen pale whitish-ochreous. Legs ochreous-whitish, anterior and middle tarsi dark fuscous towards base of joints. Forewings moderate, costa gently arched, slightly bent before middle, hind-margin almost straight, oblique; pale whitish-ochreous, sometimes irregularly suffused with darker ochreous; costa and inner margin irregularly strigulated with dark fuscous; a small oblique ochreous-fuscous spot below middle at one-third from base, posteriorly blackish-edged, representing angle of an obsolete basal patch; central fascia very oblique, from before middle of costa to anal angle, ochreous-fuscous mixed posteriorly with dark fuscous, narrow on costa, lower two-thirds much dilated but anteriorly suffused; a subquadrate ochreous-fuscous spot on costa before apex, its angle towards middle of disc somewhat produced; an irregular obscure dark fuscous line from apex along hind-margin: cilia whitish-ochreous, extremities mixed with dark fuscous, especially towards anal angle; costal fold of male with an expansible tuft of whitish hairs. Hindwings and cilia whitish or pale grey.

Distinguished from the other pale ochreous species by its much lighter markings; it is also proportionately rather broader-winged and the central fascia is conspicuously dilated on its lower two-thirds.

I have six specimens, taken at Sydney, Bulli, and Murrurundi, New South Wales, in October and April, amongst dry scrub; and have also seen others from Launceston, in Tasmania, and from Melbourne. Walker's type is from Sydney.

3. Cap. vacuana, *Walk.*

(*Conchylis vacuana,* Walk., Brit. Mus. Cat., 367; *Grapholita mutatana,* ibid. 393.)

♂ ♀. 5″-7″. Head blackish-fuscous, becoming greyish-ochreous behind, especially in female. Palpi blackish-fuscous. Antennæ whitish-ochreous, in female annulated with dark fuscous. Thorax whitish-ochreous, sometimes anteriorly greyish-fuscous. Abdomen whitish-ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi suffused with dark fuscous. Forewings rather elongate, costa in male moderately arched, in female rather straighter, hindmargin straight, very oblique; pale whitish-ochreous, irregularly mixed with ochreous, costa and inner margin irregularly strigulated with dark fuscous; basal patch represented only by five or six irregularly scattered blackish dots; central fascia very oblique, from before middle of costa to inner margin before anal angle, dark fuscous, narrow, not dilated, clearly defined and black-margined; costa in male narrowly dark fuscous towards base; a small dark fuscous black-margined triangular spot on costa at two-thirds, from apex of which proceeds a slender blackish line to anal angle; another slender blackish line crosses the wing between this and apex; a sharply-marked blackish hindmarginal streak from beneath apex to a little above anal angle: cilia pale ochreous, with a dark grey apical spot, and dark fuscous basal line becoming obsolete towards anal angle. Hindwings and cilia whitish-grey, somewhat darker posteriorly.

Immediately recognisable from the allied species by the blackish-fuscous head; it is a rather neatly marked insect, somewhat resembling *Dich. clarana.*

Common and generally distributed; it occurs near Sydney, Parramatta, and Bulli, in New South Wales; near Melbourne; at Launceston in Tasmania; and at Brisbane, Helidon, and

Toowoomba, in Queensland; during October, and from December to February, amongst thin bush.

4. Cap. hemicosmana, *n. sp.*

♂ ♀, 5¾″. Head, palpi, and thorax whitish-ochreous, somewhat mixed with darker. Antennæ whitish-ochreous, annulated with dark fuscous. Abdomen pale greyish-ochreous. Legs whitish, anterior pair suffused with dark fuscous, middle tarsi banded with dark fuscous. Forewings rather elongate, costa gently arched, in male somewhat bent before middle, hindmargin straight, oblique; very pale whitish-ochreous, costa obscurely strigulated with dark fuscous, costal edge in male suffusedly dark fuscous towards base; a blackish suffused somewhat interrupted longitudinal streak above the submedian fold from near base to about middle; outer edge of basal patch obscurely indicated in female by a dark fuscous outwardly oblique line from costa at one-fourth, ending in the longitudinal streak; central fascia dark fuscous mixed with blackish, rather narrow, very oblique, from before middle of costa, reaching only half across wing, beneath truncate and margined by a longitudinal black line, of which the posterior extremity is somewhat produced and bent downwards; a moderately large triangular dark fuscous costal blotch, mixed with blackish, extending on costa from middle to a little before apex, sharply defined, apex blackish and reaching half across wing; anal angle and lower part of hindmargin obscurely clouded with faint grey; a short linear blackish streak from apex along upper part of hindmargin: cilia pale whitish-ochreous, with a blackish-grey line near base. Hindwings whitish-grey; cilia whitish, with a faint grey line near base.

Closely allied to *C. vacuana*, but apart from the whitish-ochreous head, easily known by the markings extending only across the costal half of the forewings, and by the blackish longitudinal discal streak.

Mr. G. H. Raynor took two specimens (male and female) at Warragul in Gippsland, Victoria, in December.

5. Cap. melancrocana, *n. sp.*

♂ ♀. 7″-8″. Head and palpi dark fuscous, in female mixed with pale grey. Antennæ dark fuscous, slenderly annulated with whitish. Thorax pale grey, anterior margin broadly dark fuscous. Abdomen pale ochreous-grey. Legs whitish, anterior and middle tibiæ dark fuscous, all tarsi dark fuscous with whitish rings at apex of joints. Forewings moderate, somewhat dilated, especially in male, costa in male rather strongly arched, somewhat bent in middle, in female moderately arched towards base, hindmargin oblique; pale whitish-grey, with very faint transverse lines of pale purplish-grey and sometimes of blackish scales; costa and inner margin strongly strigulated with blackish; basal patch represented in male by a broad blackish outwardly oblique streak from one fourth of inner margin, reaching half across wing, in female obsolete; central fascia oblique, from before middle of costa to inner margin at two-thirds, dark fuscous, sharply margined with blackish, in male obsolete on costa, in female distinct throughout, upper half narrow, lower half abruptly and broadly dilated, the posterior margin being suddenly bent out in middle; a semicircular dark fuscous-grey blackish-margined patch on costa at two-thirds; a small irregular dark fuscous blotch near hindmargin above anal angle, connected with hindmargin by a blackish line; a strong black line along hindmargin: cilia pale whitish-grey, suffused with reddish-ochreous along hindmargin, with a blackish line near base. Hindwings pale grey, spotted with darker; cilia pale grey, with a darker basal line.

Distinguished from all other species of the genus by the character of the sharply-defined dark fuscous-grey black-margined markings on a pale grey ground; a very similar type of colouring is found in *Cacœcia lythrodana.*

Taken at Sydney and Parramatta, in September and October, amongst dry bush in sheltered places, generally flying near the ground; it is restricted in locality and not common.

6. Cap. montanana, *n. sp.*

♂. 7½‴. Head brownish-grey. Palpi brownish-grey, internally whitish, beneath mixed with dark fuscous. Antennæ greyish-ochreous. Thorax ochreous-brown, dark fuscous in middle. Abdomen silvery-grey, anal tuft whitish-ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings elongate, somewhat dilated, costa gently arched, not bent, hindmargin very oblique, an expansible tuft of whitish hairs beneath costal fold; grey-whitish, coarsely and irregularly strewn with ochreous-reddish scales, especially in centre of disc and towards apex; costa and inner margin irregularly strigulated with blackish, costa marked with four larger blackish spots between middle and apex; basal patch indicated by a transverse dark fuscous line from before one-fourth of costa to one-fourth of inner margin, angulated above middle; a small triangular dark fuscous spot on inner margin before middle; central fascia indistinct, irregular, from before middle of costa to inner margin before anal angle, brownish-red, suffused with blackish above and below middle, and on costa and inner margin; a triangular dark fuscous blotch on anal angle, its apex connected with a small irregular dark fuscous blotch in disc above middle at two-thirds from base; a blackish elongate streak along hindmargin; cilia pale ochreous, reddish-tinged at apex, becoming whitish at anal angle, with a blackish line near base along hindmargin. Hindwings light grey, indistinctly spotted with darker; cilia whitish-grey, with an indistinct darker grey basal line.

Readily distinguished by the ochreous-reddish irroration on a grey-whitish ground, and the definiteness of the markings.

One male, taken at Blackheath in the Blue Mountains, New South Wales, about 3,600 feet above the sea, in March, amongst low heathy scrub.

7. Cap. chimerinana, *n. sp.*

♂. 5½″-7½″. Head ochreous-brown, face dark fuscous. Palpi dark fuscous, internally whitish. Antennæ whitish-ochreous, annulated with dark fuscous. Thorax ochreous-brown, mixed with dark fuscous. Abdomen greyish-ochreous, anal tuft whitish-ochreous. Legs whitish-ochreous, anterior and middle pair suffused above with dark fuscous. Forewings rather elongate, somewhat dilated, costa moderately arched, hardly bent, hindmargin nearly straight, oblique, costal fold enclosing an expansible tuft of pale grey hairs; brownish-ochreous or ochreous-brown, thinly or sometimes densely sprinkled with dark fuscous: costa and inner margin obscurely strigulated with dark fuscous, sometimes suffused; basal patch obsolete, sometimes represented by one or two faint transverse lines or scattered blackish dots; a small obscure dark fuscous subquadrate spot on inner margin before middle; central fascia oblique, from middle of costa to inner margin just before anal angle, dark fuscous, moderately narrow, broadest below middle, its anterior edge nearly straight, posterior edge with a short abrupt semicircular excavation slightly above middle; a broadly triangular dark fuscous patch on costa hardly before apex; an obscure elongate dark fuscous streak on middle of hindmargin, sometimes suffused: cilia ochreous or whitish-ochreous, with a blackish or dark grey line near base. Hindwings grey, indistinctly spotted with darker; cilia grey, with a darker basal line.

This and the three following species form a closely allied group, the members of which are very similar and obscure in colouring, and often difficult to separate, especially as they all present some range of variation. This species comes nearest to the New Zealand *C. semiferana*, from which it can only be distinguished with certainty by the dark fuscous face; from *C. sordidatana* it is also separated by the same character, as well as by the slightly narrower forewings, and the obsolescence of the basal patch; *C. obfuscatana* is smaller, shorter, and broader-winged, usually with a distinct pale ochreous space beneath the costal fold, and the darker markings almost wholly suffused and obliterated.

Tolerably common near Sydney and Parramatta amongst dry bush, in June, and from October to December.

8. Cap. semiferana, Walk.

(*Teras semiferana*, Walk., Brit. Mus. Cat. 306; *Sciaphila detritana*, ibid. 356; *Tinea admotella*, ibid. 485; *Grapholita abnegatana*, ibid. 991.)

♂ ♀. 5¼″-7″. Head ochreous-grey or ochreous-brown, face pale ochreous. Palpi pale ochreous, dark fuscous on sides. Antennæ pale ochreous, annulated with dark fuscous. Thorax dark greyish-ochreous or fuscous. Abdomen greyish-ochreous, anal tuft of male pale ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi dark fuscous ringed with pale ochreous. Forewings moderate, in male dilated, costa moderately arched, hardly bent, hindmargin nearly straight, oblique; in female more elongate, not dilated, costa arched towards base, hindmargin more rounded; brownish-ochreous or ochreous-brown, often irregularly transversely strigulated with dark fuscous; costa and inner margin coarsely strigulated with blackish; basal patch distinctly indicated in male by a blackish spot at base of costa and a blackish inwardly oblique streak from disc near base to inner margin, in female obsolete; central fascia oblique, from before middle of costa to inner margin before anal angle, dark fuscous, containing a blackish longitudinal mark above middle, lower half often obsolete, anterior edge distinct, waved, posterior edge generally uniting with a dark fuscous triangular patch on costa before apex so as to form a larger triangular blotch; an elongate dark fuscous cloud near middle of hindmargin, often connected with the costal patch, in female obliterated; a blackish interrupted hindmarginal line: cilia pale ochreous, paler towards anal angle, with a darker basal line.

This species shows a good deal of variability in size, and in distinctness of marking; some of the forms approach very closely to *C. chimerinana*, but always differ in the pale ochreous face, and in the possession of a distinct blackish longitudinal mark in the middle of the central fascia. From *C. sordidatana* it is distinguished by the narrower forewings, the incomplete indications of a basal patch, and the generally lighter and less suffused ground-colour.

I took the species commonly amongst scrub near Dunedin and Christchurch, New Zealand, in January; and later in the same month three specimens of a small and more variegated form in the swampy forest near Hamilton, on the Waikato River; these latter were probably a second generation.

Walker's types of *Sciaphila detritana* and *Tinea admotella* are exceedingly poor in condition, but appear to be correctly referred.

9. Cap. sordidatana, *n. sp.*

♂ ♀. 6″-8½″. Head greyish-brown, face paler. Palpi dark fuscous, internally whitish. Antennæ whitish-ochreous, annulated with dark fuscous. Thorax greyish-brown, suffused with dark fuscous. Abdomen ochreous-grey, anal tuft of male dull whitish mixed with grey. Legs ochreous-whitish, anterior tibiæ suffused with dark fuscous, anterior and middle tarsi banded with dark fuscous. Forewings moderately broad, in male short, dilated, costa rather strongly arched and bent before middle, hindmargin straight, oblique, in female more elongate, costa strongly but evenly arched towards base; dull reddish-grey-brown, irregularly mixed with pale greyish-ochereous scales; costa and inner margin coarsely and obscurely strigulated with blackish, often partially suffused; basal patch small, obscure dark fuscous, its outer edge distinct, obtusely angulated outwards, in male forming a black oblique spot below the angle; central fascia distinct on costa before middle, obscure dark fuscous, extending to a blackish longitudinal mark in middle of disc (in female obsolete), thence obliterated on the inner edge faintly traceable (especially in female); an indistinct broadly triangular dark fuscous blotch on costa towards apex; a roundish dark fuscous blotch on anal angle, anteriorly indistinct and suffused, posteriorly distinct, often connected above with the costal triangular blotch; a small triangular elongate dark fuscous blotch on middle of hindmargin; all these markings are very obscure and often suffused: cilia grey-whitish mixed with ochreous, with two suffused blackish-grey lines, often more or less distinctly chequered. Hindwings grey, faintly spotted with darker; cilia pale grey, with a dark grey basal line.

A very dull and obscure-looking species; broader-winged and rather larger than either *C. chimerinana* or *C. semiferana*, with darker ground-colour, more suffused markings, and a distinct darker basal patch. It resembles *C. obfuscatana* in breadth of wing, but is generally considerably larger, with distinct darker markings, and without the pale patch beneath costa near base.

Mr. G. H. Raynor found this species very abundant in gardens round Melbourne, flying in great numbers round roses and other shrubs in the evening; and I have taken it occasionally near Sydney, in August and September.

10. Cap. obfuscatana, *n. sp.*

♂. 5‴-6½‴. Head and thorax ochreous-fuscous mixed with blackish. Palpi brownish-ochreous, internally white. Antennæ brownish-ochreous. Abdomen greyish-ochreous, anal tuft whitish. Legs whitish, anterior tibiæ and tarsi suffused with dark fuscous. Forewings short, rather broad, costa rather strongly bent in middle, hindmargin oblique, an expansible tuft of whitish hairs beneath fold; greyish-ochreous, irregularly suffused throughout with dark fuscous mixed with blackish, so that no distinct markings are discernible, except that the costal fold and a semi-ovate space below it are generally paler greyish-ochreous or clear ochreous, and not suffused: cilia dark fuscous-grey mixed with ochreous, with a black interrupted line near base. Hindwings whitish-grey, darker towards apex, and spotted with darker ochreous-grey; cilia whitish, with a darker grey basal line.

Distinguished by its small size, short broad forewings, and general dark fuscous suffusion, without distinct markings except (usually) the pale subcostal space near base. The female is still unknown to me, and may probably differ in these respects.

Occasionally taken, especially at light, by which it is strongly attracted; it occurs at Sydney, Bulli, and Kiama, in New South Wales, from September to February.

11. Cap. scutiferana, *n. sp,*

♂ ♀. 5″-6″. Head, palpi, antennæ, and thorax ochreous-white; palpi in male rather directed upwards, but oblique and not appressed to face, in female straight, horizontally porrected. Abdomen pale ochreous. Legs whitish, anterior tibiæ and tarsi suffused with dark fuscous. Forewings rather short, somewhat dilated, more strongly in male, costa in male strongly arched, slightly bent before middle, in female strongly arched at base, thence nearly straight, hindmargin nearly straight, very oblique; white, faintly suffused with pale ochreous; costa and inner margin with a few irregular blackish strigulations towards base; basal patch indicated by a rather oblique blackish streak from inner margin at one-fourth, reaching half across wing, in female uniting there with a slender black line from one-sixth of costa; central fascia rather oblique, from costa before middle to inner margin beyond middle, blackish mixed with ochreous-fuscous, upper half rather narrow, lower half abruptly and strongly dilated, the posterior edge being suddenly bent outwards in middle; a blackish triangular patch on costa at two-thirds, its apex almost or quite confluent with the angle of the dilated portion of central fascia; a small blackish spot on costa between triangular patch and apex: cilia pale ochreous, becoming more whitish at anal angle, obscurely barred with blackish. Hindwings in male ochreous-whitish, greyish-whitish at apex, cilia ochreous-white; in female pale ochreous-grey, posteriorly darker, cilia pale ochreous-grey with a darker basal line.

A small but conspicuously distinct species, at once known by the well-contrasted blackish markings on a white ground.

I took one specimen on the forest-clad hills between Kangaroo Valley and Moss Vale, New South Wales, in January; and subsequently six others in dense scrub near Rosewood, Queensland, in September.

12. Cap. plathanana, *n. sp.*

♂ ♀. 5½″-6″. Head, palpi, and antennæ blackish-fuscous. Thorax pale yellow, anterior margin narrowly blackish-fuscous. Abdomen whitish-ochreous, anal tuft of male whitish-yellow, of female blackish-fuscous. Forewings moderate, costa gently arched, hardly bent, hindmargin rounded; pale golden-yellow, with two direct transverse blackish-fuscous fasciæ suffused with bluish-grey-metallic scales except on their margins; first at one-third, nearly straight, rather narrow, irregularly margined, sending a slender dark fuscous streak along extreme costal edge to base; second much broader, parallel, from about four-fifths of costa to anal angle, somewhat contracted in middle, broadest on costa: cilia ochreous-yellow, beneath the second fascia blackish. Hindwings pale grey; cilia whitish, with a grey basal line.

This peculiarly marked and beautiful species differs widely from all others in the yellow ground-colour, and the position of the two direct parallel fasciæ.

I took two specimens (male and female) in the bush near Sydney in December and February; and have seen a third from the same locality.

12. ACROCEUTHES, *n. g.*

Thorax smooth or crested. Antennæ short, in male thickened, ciliated. Palpi moderate, straight, porrected, in male clothed above with very long dense erect spreading hairs, in female with dense rather appressed scales, terminal joint almost concealed. Abdomen in male with very large tufted anal valves. Forewings short, broadly oblong, costa in male with a short imperfect basal fold, arched before middle, apex nearly rectangular, hindmargin obliquely rounded. Hindwings rounded, elongate, hardly as broad as forewings. Forewings with veins 7 and 8 stalked, vein 7 running to hindmargin. Hindwings with veins 3 and 4 from a point, 5 approximated to 4 at base, 6 and 7 stalked.

Distinguished from its nearest allies by the imperfect costal fold, the erect spreading tuft of hairs on the upper side of the palpi, and the large tufted abdominal valves of the male; the female is hardly distinguishable from *Capua*. I have included *A. oxygrammana* in the genus on account of the evident close alliance between the female and the corresponding sex of *A. metaxanthana;* but the male is still unknown to me.

A. metaxanthana may be known from *A. oxygrammana* by the pale yellow hindwings.

1. Acroc. metaxanthana, *Walk.*

(*Cacœcia metaxanthana,* Walk., Brit. Mus. Cat. 315; *Sciaphila projectana,* ibid. 352; *Carpocapsa trajectana,* ibid. 992.

♂. 5½‴-6‴. Head dark grey-brown, face white. Palpi white with long fine erect white hairs above. Antennæ greyish-ochreous. Thorax brownish-ochreous, dark fuscous on back. Abdomen dark ochreous-grey, anal tuft whitish-ochreous. Legs white, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings short, broad, costa rather strongly bent before middle, hindmargin obliquely rounded; basal third within a suffused outwardly angulated line white, more or less broadly strigulated towards inner margin with brownish-ochreous and dark fuscous, and with a stronger oblique dark fuscous streak from inner margin at one-fifth, reaching half across wing; a blackish line along basal third of costa, ending posteriorly in a black spot; remainder of wing ochreous-brown, irregularly mixed with dark fuscous and blackish, and with a few whitish scales; costa strigulated with blackish-fuscous; a very oblique silvery-whitish indistinct line from beyond middle of costa in an irregular curve to hindmargin below middle, thence continued to anal angle; another similar line from costa a little before apex to hindmargin below apex: cilia brownish-ochreous, towards anal angle whitish-ochreous, irregularly barred with dark fuscous. Hindwings whitish-yellow, hindmargin suffused or spotted with grey; cilia whitish-grey, with a darker grey basal line.

♀. 6¼″-7½″. Head, palpi, antennæ, thorax, and abdomen ochreous-brown. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused above with dark fuscous. Forewings broad, costa rather strongly arched, becoming straight towards apex, hindmargin more oblique than in male; light ochreous-brown, costa and inner margin strigulated with dark fuscous; a very large dark fuscous or reddish-fuscous rounded-triangular blotch, mixed with blackish, on posterior half of inner margin, its apex nearly reaching costa beyond middle, its anterior edge nearly straight, its posterior edge rounded, ending on hindmargin just above anal angle; a fuscous obliquely curved streak from three-fourths of costa to middle of inner margin, irregularly margined on both sides with silvery-metallic scales; apex dark fuscous: cilia dark reddish-fuscous or blackish-fuscous. Hindwings pale yellow, spotted with grey towards margins, apex and hindmargin grey; cilia grey.

The sexes are at first sight very different in appearance, but the markings are really nearly identical in position, the differences being chiefly in intensity of colouring. Both sexes may be separated from *A. oxygrammana* by the pale yellow hindwings.

attenuated in middle almost or quite to a black line, beneath the attenuated portions becoming suddenly confluent into a large subquadrate black-margined patch; a somewhat sinuate blackish line from costa a little before apex to hindmargin above anal angle; a blackish line from costa a little before apex to hindmargin above anal angle; a blackish line along hindmargin: cilia cinereous-grey, extremities beyond a blackish line white. Hindwings fuscous-grey spotted with darker; cilia whitish-grey, with two dark fuscous-grey lines.

A conspicuously distinct species, characterised by the two dark grey black-margined fasciæ on a pale grey ground, with their lower portions confluent in a large blotch; the white expansible tuft of the palpi in male is also a peculiar character, to which an analogy is found in the genus *Acroceuthes*.

I took six specimens in the bush at Blackheath in the Blue Mountains, New South Wales, (3,600 feet,) in February.

16. Cac. miserana, *Walk.*

(*Teras miserana*, Walk., Brit. Mus. Cat. 301; *Teras canigerana*, ibid., 301; *Sciaphila debiliana*, ibid. 351; *Teras absumptana*, ibid. Suppl. 1780).

♂ 7″-8½″, ♀ 8½″-9½″. Head, palpi, and thorax grey-whitish mixed with dark grey. Antennæ grey-whitish. Abdomen whitish-grey. Legs whitish, anterior and middle tibiæ and tarsi banded with dark fuscous. Forewings moderate, posteriorly somewhat contracted, costa moderately arched towards base, in male bent before middle, costal fold broad, extending from base to middle of costa, hindmargin obliquely rounded; whitish, transversely irrorated with grey; costa and inner margin strigulated in male with dark fuscous, in female with cinereous-grey; a small dark grey black-margined spot on costa at one-fourth in male, in female represented by a smaller grey mark; a cloudy grey spot on inner margin at one-third, in some specimens of male larger and blackish-grey, sometimes suffused at apex into central fascia; central fascia narrow, oblique, from before middle of costa to beyond middle of inner margin, in male blackish, in female cinereous-grey, partially obsolete above middle, margins rather irregular; a small cloudy triangular patch on costa at two-thirds, in male blackish-grey, in female cinereous-grey; two or three small transverse streaks of cinereous or blackish scales near hindmargin and above anal angle: cilia whitish, with a faint dark grey line. Hindwings whitish-grey, darker posteriorly; cilia whitish, with a grey line near base.

In form of wing this species approximates to *C. responsana* and *C. postvittana*, but differs structurally from them in the character of the costal fold, which is strong and extends from the base fully to the middle of costa. The whitish-grey groundcolour distinguishes it from all its nearest allies; *C. lythrodana* is also a purely grey insect, but has totally different and more sharply defined markings. The female is very different in appearance from the male, and has more the superficial features of a *Teras*.

Very common at Sydney, of sluggish habit and usually taken at rest on fences; it occurs from August continuously to May, being absent only during the two winter months of June and July; I also took a specimen near Wollongong, New South Wales, and one of Walker's types ts said to be from Moreton Bay, Queensland, but at Sydney it appears to be a garden insect.

17. Cac. jugicolana, *n. sp.*

♀. 8¼″-8½″. Head, palpi, and thorax brownish-ochreous. Antennæ light ochreous, annulated with dark fuscous. Abdomen ochreous-grey. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused above with dark fuscous. Forewings moderate, oblong, not dilated, costa moderately arched near base, hindmargin slightly sinuate below apex, rather oblique; brownish-ochreous, costa and inner margin shortly strigulated with obscure dark fuscous; outer edge of basal patch indistinctly indicated by a fuscous line, sharply angulated above middle; a cloudy dark fuscous spot on inner margin at one-third, sometimes obsolete; central fascia oblique, from costa before middle to inner margin at two-thirds, ochreous-fuscous, darker fuscous on costa and inner margin, narrow on costa, gradually but not strongly dilated, margins rather irregular; an obscure fuscous triangular spot on costa at two-thirds, from apex of which proceeds a slender cloudy fuscous line to anal angle: cilia pale brownish-ochreous, with a dark fuscous-grey basal line. Hindwings whitish-grey, towards apex suffused with ochreous, spotted with darker grey; cilia ochreous-white, with a dark grey line near base.

In the absence of the male, it cannot be affirmed with certainty to which section of the genus this species is most nearly related; in shape of wing it resembles *C. polygraphana*, in markings *C. mnemosynana;* the sinuation of the hindmargin distinguishes it from the species which follow. The specimens obtained show no variation.

Mr. G. H. Raynor bred six specimens (all females) of this species from larvæ (undescribed) which he found feeding on a plant of the *Compositæ* "resembling *Senecio*" in pasture-fields on the hills near Murrurundi, New South Wales, in September; the imagos emerged in October.

18. Cac. responsana, *Walk.*

(*Teras responsana,* Walk., Brit. Mus. Cat. 297.)

♂. 9‴-10‴. Head, palpi, and antennæ whitish-ochreous. Thorax pale ochreous, with a suffused dark fuscous central transverse line. Abdomen greyish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi banded with dark fuscous. Forewings oblong, costa moderately arched at base, bent before middle, costal fold short and narrow, not reaching base, hindmargin obliquely rounded; pale whitish-ochreous, thinly sprinkled with greyish-fuscous; costal fold strigulated with dark fuscous, somewhat suffused with ferruginous; outer edge of basal patch indicated by a transverse oblique rather curved line of four or five blackish dots from costa at one-fifth to inner margin at one-third; central fascia moderate, oblique, from costa before middle to inner margin before anal angle, dark fuscous, mixed with ferruginous and irregularly edged with blackish, somewhat dilated on lower half, anterior edge nearly straight, posterior edge irregular and suffused below middle, with a round projection near inner margin, edged by an outwardly oblique streak from inner margin; a small elongate dark fuscous spot along costa about three-fourths, posteriorly suffused; a small irregular, sometimes obsolete, dark fuscous spot near middle of hindmargin containing two or more black dots, which are sometimes alone distinct; a short slender interrupted blackish streak near hindmargin from apex: cilia whitish, at base ochreous, with a faint dark grey line: sometimes the whole wing is more or less suffused with reddish-fuscous. Hindwings fuscous-grey, darker posteriorly, faintly spotted with darker; cilia whitish, with a dark grey line near base.

♀. 11‴-12‴. Head, palpi, antennæ, thorax and forewings ochreous-brown; forewings more elongate than in male; markings as in male but generally obsolete, or distinct on costa and inner margin only, sometimes dark smoky-fuscous but suffused; outer edge of basal patch often forming a small dark spot on inner margin. Hindwings rather darker grey than in male.

Allied to *C. postvittana*, but usually larger and less variable; easily distinguished from it in the male by the greyish-fuscous irroration of the groundcolour, the darker and more ferruginous-tinged markings, the greater breadth of the central fascia towards the costa, and the darker hindwings. The female is very similar to *C. postvittana* female, but always darker and more fuscous, with a much less ochreous tinge.

Taken, not very commonly, at Sydney and Parramatta, usually amongst *Acacia decurrens;* very common at Melbourne, and occurs also at Hobartown, Tasmania; it occurs from September to November, and is sluggish in habit. I bred one specimen from *Acacia decurrens*, having brought in a branch as food for other species, without noticing the larva.

The description of *Tortrix ashworthana*, Newman, (Trans. Ent. Soc. Lond. N.S. 3, 286) seems rather to point to this species, but is insufficient for determination.

19. Cac. postvittana, *Walk.*

(*Teras postvittana*, Walk., Brit. Mus. Cat. 297; ? *Teras retractana* ibid. 288: *Teras dotatana*, ibid. 298; *Teras scitulana*, ibid. 298; *Teras basialbana*, ibid. 299; *Teras secretana*, ibid. 300; *Pandemis secundana*, ibid. 310; *Pandemis consociana*, ibid. 311; *Dichelia reversana*, ibid. 321; *Dichelia fœdana*, ibid. 321; *Dichelia sobriana*, ibid. 322; *Pædisca immersana*, ibid. 380).

♂. 6¾″-9½″. Head, palpi, antennæ and thorax whitish-ochreous, more or less suffused with brownish-ochreous. Abdomen whitish-ochreous. Legs whitish, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous-grey. Forewings broad, short, costa gently arched, strongly bent before middle, costal fold short, narrow, fringed with hairs, not reaching base, hindmargin obliquely rounded; pale ochreous or whitish-ochreous, sometimes irrorated with fuscous; costa and inner margin more or less distinctly strigulated with ochreous or fuscous; markings variable in intensity, reddish-ochreous, fuscous, or dark reddish-fuscous; basal patch faintly indicated or quite obsolete, outer edge angulated, often represented only by a small costal spot at one-fifth; central fascia oblique, from before middle of costa to inner margin before anal angle, slender on costa, often widely interrupted in middle, anterior edge generally distinct, sometimes dark-margined, nearly straight, posterior edge distinct towards costa, dilated and suffused beneath; sometimes a narrow streak or cloud along inner margin from base to fascia, often produced also along hindmargin and attenuated to apex, or the hindmarginal portion is represented by two or three elongate streaks or rows of dots; an elongate narrow blotch along costa about three-fourths; sometimes there are faint hindmarginal dots, or the veins are posteriorly lined with darker, or the entire apical half of wing beyond central fascia is suffused with reddish-ochreous: cilia whitish-ochreous or ochreous, with a dark fuscous line, and a dark spot at anal angle. Hindwings whitish-grey, towards costa whitish, more grey towards inner margin, spotted with darker grey: cilia whitish, faintly ochreous-tinged towards apex, with a dark grey line.

♀. 9‴-11½‴. Head, thorax, and forewings more suffused with brownish-ochreous; forewings more elongate, often irrorated with darker; markings as in male but more indistinct and suffused; outer edge of basal patch generally forming a small subquadrate dark fuscous spot on inner margin: cilia pale ochreous, becoming reddish-ochreous towards apex, with a dark fuscous line suffused at apex and anal angle. Hindwings hardly darker than in male, somewhat ochreous-tinged at apex.

This species is very variable both in size and markings, so that it is difficult to include all the forms under one description, but there can be no doubt that all the varieties belong to the same species. In form of wing it is similar to *C. responsana* and *C. mnemosynana*, but the costal fold of the male is less strong than in the former, and stronger than in the latter of those species; from both the male is generally distinguishable by the clear pale ochreous groundcolour, and more or less ochreous-tinged markings; most of the varieties are also peculiar to this species, and in the normal form the slenderness of the central fascia towards costa is a good distinguishing characteristic. The female may be known by its uniform brownish-ochreous hue. Small pale specimens of the male are very similar to *Tortrix glaphyrana*, but the presence of the costal fold affords a ready test.

Larva moderalely elongate, cylindrical, rather attenuated posteriorly, active; dull yellowish-green, spots hardly lighter;

dorsal and subdorsal lines indistinctly darker green, often obsolete; head greenish-ochreous. Feeds between joined leaves, or rolled leaves or amongst spun-together flowers or fruits of *Correa speciosa*, *Boronia ledifolia (Rutaceæ)*, *Persoonia lanceolata*, *Grevillea robusta (Proteaceæ)*, and a marsh-growing species of *Polygonum*, in August, September, and January; it is probably almost indiscriminately polyphagous. Pupa free amongst joined leaves.

Generally distributed and abundant; it occurs at Sydney, Bathurst, Orange, Morpeth, and Kiama in New South Wales, and also at Melbourne, and in Tasmania; from August to October, and in January, March, and April.

From the formidable array of synonyms prefixed, it will be seen that Walker described the twelve specimens in the British Museum as twelve different species, locating them in four distinct genera. The type of *Teras retractana*, quoted as a doubtful synonym, is a specimen of this species and is labelled Australia, but the description does not at all agree with the type, and as it professes to be taken from an American insect, the specimens have probably been interchanged; the name therefore cannot stand. The other types are all more or less ordinary varieties.

20. Cac. mnemosynana, *n. sp.*

♂. 7¾‴-8‴. Head, palpi, and thorax greyish-fuscous; palpi elongate. Antennæ greyish-fuscous, annulated with blackish. Abdomen whitish-grey. Legs whitish, anterior pair dark fuscous, middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings moderate, oblong. costa gently arched, bent before middle, costal fold rudimentary and very short, not extending to base, hindmargin obliquely rounded; greyish-fuscous, indistinctly transversely strigulated with darker; basal patch faintly darker, outer edge angulated above middle; central fascia oblique, from before middle of costa to inner margin before anal angle, rather narrow towards costa, lower two-thirds moderately dilated, anterior margin slightly curved, posterior margin irregularly waved, distinct; an outwardly curved dark fuscous line from costa at two-thirds to hindmargin above anal angle, beyond which the apical portion of the wing is suffusedly dark fuscous, less strongly towards apex itself: cilia greyish-ochreous, with a strong black line near base, suffused at anal angle. Hindwings whitish spotted with grey; cilia whitish, with a dark grey line near base.

Nearly allied to the two preceding, but readily separated by the rudimentary costal fold, the greyish-fuscous groundcolour, and whitish hindwings. The female is not known to me.

Five males taken at Bulli, New South Wales, and at Melbourne, and Warragul, Gippsland, in October and December.

21. Oac. liquidana, *n. sp.*

♂ ♀. 8½″-9½″. Head, palpi, antennæ, and thorax light ashy-grey, with a few black scales; palpi rather short. Abdomen whitish-grey, anal tuft ochreous-white. Legs ochreous-white, anterior and middle tibiæ and tarsi suffused with dark fuscous-grey. Forewings moderate, in female narrow, costa moderately arched towards base, costal fold extremely short and rudimentary, not reaching base, hindmargin oblique, especially in female; light ashy-grey, faintly mixed with ferruginous, and posteriorly with a few scattered black scales; costal edge suffused with dark grey towards base in male: cilia whitish mixed with light grey. Hindwings whitish-grey or light grey; cilia white, with a faint grey line near base.

A distinct species, characterised by its unicolorous light grey forewings; it has a superficial resemblance to *Tortrix concordana* and *T. indigestana*, but apart from the costal fold, which is very slight and imperfect, it may be recognised by its much larger size.

Five specimens taken in the dry bush at Blackheath in the Blue Mountains (3,600 feet) and two at Mittagong; I have also seen a specimen from Melbourne; it is on the wing in March.

22. Cac. tessulatana, *n. sp.*

♂. 8″. Head and palpi whitish, mixed irregularly with dark fuscous; palpi rather short. Antennæ black. Thorax dark fuscous, mixed posteriorly with white. Abdomen light greyish-ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings moderate, rather elongate, costa moderately arched, costal fold very short and rudimentary, fringed with hairs, hindmargin obliquely rounded; white, coarsely irrorated with dark fuscous, and with dark fuscous markings; costal fold and extreme base of wing dark fuscous; an oblique slender fascia from costa at one-fourth, reaching to fold, angulated above middle; an irregular oblique streak from middle of costa, not reaching half across wing, its extremity bent outwards; beneath this is a small double spot below middle of wing; a small spot on middle of inner margin; between middle and apex are five or six small subquadrate spots on costa; between the extremity of the oblique streak from middle of costa and the apex of wing is an elongate cloudy streak, suffusedly connected with each; a cloudy spot on anal angle, and a roundish smaller spot directly above it; veins near hindmargin lined with dark fuscous; a dark fuscous line along hindmargin: cilia white, basal half barred with dark fuscous. Hindwings light fuscous-grey; cilia white, with a dark grey line near base.

Also very distinct from any other; in form of wing resembling the preceding, distinguished by the white groundcolour and reticulated dark markings, which are quite different from those of *C. desmotana*.

Mr. G. H. Raynor took one specimen at Melbourne in December.

23. Cac. desmotana, *n. sp.*

♂ ♀. 8½″-9½″. Head black behind, face and crown white. Palpi rather short, black, terminal joint and apex of second joint white. Antennæ black, very slenderly annulated with white. Thorax white, anterior margin black; in male a black spot on back. Abdomen pale dull yellow. Legs yellowish-white, anterior and middle tibiæ and tarsi suffused with dark fuscous. Forewings rather broad, costa rounded especially towards base, costal fold very short and quite rudimentary, hindmargin rather oblique, rounded; clear white, with sharply-defined blackish-fuscous, almost black, markings; a small triangular spot on inner margin at base, extending nearly to costa; a slender nearly straight fascia from costa at one-fourth to inner margin at one-third, its posterior margin with a very short tooth on submedian fold; between this fascia and base the extreme costal edge is blackish; a second narrow fascia from middle of costa, becoming bifurcate in middle of wing, where its anterior edge is more or less sharply excavated, the first branch running to inner margin beyond middle, the second to inner margin just before anal angle; a third narrow fascia from costa at three-fourths to hindmargin above anal angle, connected with the second by a slender streak from middle of second to third near costa; a narrow streak from apex, connecting with third fascia below middle; sometimes a small dot on costa before apex; cilia dull whitish-ochreous. Hindwings pale dull yellowish, often deeper and more greyish-tinged posteriorly; cilia whitish-yellow, with a faint yellowish-grey line.

This handsome and conspicuous insect is very similar in type to *Tortrix amœnana*, but the markings will be found on comparison to be very different in position, and I am not sure that the resemblance indicates anything more than an analogy.

I took five specimens amongst low heathy scrub at Blackheath on the Blue Mountains, at an elevation of 3,600 feet, in February.

19. TORTRIX, Tr.

Thorax smooth. Antennæ in male shortly ciliated. Palpi moderate, porrected, second joint triangularly scaled, terminal joint distinct. Forewings moderately elongate, costa in male simple, tolerably evenly arched, hindmargin obliquely rounded.

Hindwings broader than forewings, rounded-trapezoidal. Forewings with veins 7 and 8 separate, vein 7 running to hindmargin. Hindwings with veins 3 and 4 rising from a point, 5 approximated to 4 at base, 6 and 7 separate.

This is the typical genus of the largest and most simply-organised group of the family, characterised by the separation of veins 7 and 8 of forewings, the origin of veins 3 and 4 of hindwings from a point, and the approximation of 5 to 4 at base. Of the other Australian genera belonging to the group, *Cacœcia* is distinguished from *Tortrix* by the costal fold of male, *Cryptoptila* by the tuft of scales on the costa of hindwings, *Arotrophora* by the elongate palpi, and the deeply dentate antennæ of male, having cilia arranged in tufts, *Dipterina* by the origin of veins 6 and 7 of hindwings from the same stalk, and by the antennæ of male having long fine cilia arranged in two rows. Other genera of the group (not Australian) are *Teras*, having vein 7 of forewings running to costa, (Europe and America); *Pandemis*, having an excavated notch in the antennæ of male above basal joint (Europe and America); *Auchoteles*, (South America) having very short minute palpi; and probably other genera not yet sufficiently defined, whose distinctness it is not here necessary to examine.

There is a considerable number of European and American species, and the genus is probably of universal distribution. I have twelve Australian species, and four from New Zealand, of which the following is a tabulation:

I. Forewings white, with five black fasciæ .. 1. amœnana.
II. Forewings dark fuscous, with three whitish fasciæ .. .. 2. subfurcatana.
III. Forewings pale greyish-ochreous or whitish, with dark longitudinal markings 4. aulacana.
IV. Forewings with distinct transverse central fasciæ.
  A. Forewings light reddish-fuscous .. 3. ceramicana.

B. Forewings whitish-ochreous.
1. Dorsal half clouded with fuscous-grey 5. peloxythana.
2. Dorsal half not clouded.
a. Hindwings fuscous-grey .. .. 6. trygodana.
b. Hindwings whitish or pale grey.
i. Central fascia dilated on lower half .. .. 7. philopoana.
ii. Central fascia slender throughout 8. glaphyrana.
C. Forewings grey .. .. ..13. aërodana, (part)

V. Forewings without transverse fascia.
A. Forewings pale ochreous or yellow.
1. With a purple-fuscous hindmarginal band.. .. ..16. standishana.
2. Without marginal band.
a. Hindwings dark smoky-grey ..15. concolorana.
b. Hindwings whitish-grey.
i. Dorsal half of forewings clouded with grey .. ..10. centurionana.
ii. Dorsal half of forewings not clouded.
*. Forewings with a few scattered black scales .. 9. leucaniana.
**. Forewings without scattered black scales .. .. 8. glaphyrana, ♀.
B. Forewings grey.
1. Forewings rather broad .. ..11. concordana.
2. Forewings elongate.
a. Hindwings dark grey .. ..13. aërodana, male.
b. Hindwings whitish-grey.
i. Forewings with numerous scattered black scales .. ..12. indigestana.
ii. Forewings without black scales 13. aërodana, female.
C. Forewings deep brownish or reddish-ochreous .. ..14. siriana.

1. Tort. amænana, *Walk.*

(*Conchylis amœnana*, Walk., Brit. Mus. Cat. 366; *Conchylis semirectana*, ibid. 987; *Conchylis galbana*, Feld., Reise der Novara, Pl. cxl., 29.

♂ ♀. 7½‴-10½‴. Head deep yellow. Palpi black, apex of second joint yellow above. Antennæ dark fuscous. Thorax black, with a white spot on each side, generally confluent posteriorly. Abdomen deep golden-yellow. Legs yellow, anterior and middle pair suffused with dark fuscous. Forewings moderate, somewhat dilated posteriorly, costa moderately arched, hindmargin obliquely rounded; clear white, with sharply-defined black markings, forming five transverse fasciæ, rather variable in form and intensity; first narrow, rather oblique, close to base; second narrow, nearly straight, from costa at one-fourth to inner margin at one-third; third from before middle of costa to middle of inner margin, variable, often irregular, margins sometimes toothed, sometimes enclosing a small white spot on inner margin; fourth rather irregular, from costa at three-fourths to inner margin just before anal angle, dilated towards inner margin, and generally enclosing a small white spot there; between third and fourth fasciæ is a small spot on costa, sometimes confluent at its extremity with fourth fascia beneath costa; fifth from costa before apex to hindmargin above anal angle, connected below costa by a short transverse bar with fourth; an irregular black streak along hindmargin from apex, reaching to extremity of fifth fascia, attenuated beneath; cilia dull whitish-ochreous, suffused with grey towards base. Hindwings golden-yellow, posteriorly rather deeper, apex with a small double suffused dark fuscous spot; cilia whitish-yellow, with an indistinct fuscous-grey line near base.

This strikingly handsome species bears some general resemblance to *Cacœcia desmotana*, but the markings are quite differently placed, and the hindwings are deeper yellow; the forewings are also rather narrower.

Larva stout, cylindrical, with scattered whitish hairs; rather dull green, spots slightly paler, dorsal vessel indigo-green; head reddish-ochreous, more reddish on crown, face greenish; second segment greenish-ochreous, with a darker green square patch above on posterior margin. It feeds amongst spun-together shoots, or along twigs amongst the leaves, on *Monotoca scoparia* (a low heath-like shrub belonging to the *Epacrideæ)*, usually three or four together in a good deal of dense web: and pupates in a rough silken cocoon in the same situation. These larvæ were found in October, and the imagos emerged in November.

Very common amongst its food-plant at Blackheath on the Blue Mountains, 3,600 feet above the sea; and occurs also more sparingly (and of a smaller size) in places near Sydney; it is on the wing in November, January, and March.

2. Tort. subfurcatana, *Walk.*

(*Conchylis subfurcatana*, Walk., Brit. Mus. Cat. 368).

♂ ♀. 7½″-8½″. Head, palpi, and thorax dark reddish-ochreous brown. Antennæ dark fuscous. Abdomen fuscous-grey, on sides ochreous. Legs pale yellowish, anterior and middle pair suffused above with dark fuscous. Forewings moderately broad, costa moderately arched towards base, hindmargin slightly oblique; rounded; white, sometimes suffused with pale ashy-grey, with sharply-defined markings, varying from reddish-ochreous-brown to dark fuscous; basal patch somewhat paler at base, its outer edge nearly straight, extending from one-fourth of costa to one-third of inner margin; central fascia rather oblique, from before middle of costa to middle of inner margin, moderately broad, slightly curved, sometimes slightly dilated towards inner margin; a second fascia, nearly equally broad, from costa at two-thirds to anal angle, rather sinuate, generally enclosing a white dot on costa, and connected with central fascia on inner margin by a slender streak; a rather broad streak from apex along upper two-thirds of hindmargin, rapidly attenuated beneath: cilia ochreous-grey, with an indistinct dark fuscous line near base. Hindwings dark fuscous-grey, sometimes becoming golden-yellow towards base; cilia whitish-ochreous, with an indistinct dark fuscous line near base.

A distinct species, appearing to have three straight white or grey-whitish fasciæ on a dark ground. The tendency of the hindwings (in both sexes) to sometimes become yellow at the base is a curious form of variation.

Rather common in marshy places amongst thickets of swamp-vegetation; it occurs at Sydney, Bulli, and on the Richmond River, in New South Wales; near Melbourne; and at Brighton in Tasmania; from September to November, and in January and March.

3. Tort. ceramicana, *n. sp.*

♂. 8½″. Head, palpi, antennæ and thorax reddish-fuscous; thorax crested. Abdomen pale greyish-ochreous. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused above with dark fuscous. Forewings moderate, costa moderately arched, hindmargin sinuate below apex, oblique; light reddish-fuscous, with white and dark reddish-fuscous markings; costal edge slenderly dark fuscous towards base; an indistinct reddish-fuscous streak beneath costa from near base to one-third, interrupted by a whitish spot before its extremity; a sharply-defined triangular dark reddish-fuscous spot, edged with ochreous-white, below middle towards base, its anterior angle very acute, nearly reaching middle of base of wing, upper posterior angle in middle of wing at one-third from base, lower posterior angle almost reaching middle of inner margin; a rather narrow dark reddish-fuscous streak from somewhat above centre of wing to anal angle, margined with ochreous-whitish, posteriorly sinuate; between its upper extremity and the upper posterior angle of the triangular spot is a small oblong white spot; a large triangular dark reddish-fuscous blotch towards apex, whitish-margined beneath, its apex below costa slightly beyond middle, somewhat suffused into apex of central streak, its base extending along hindmargin from beneath apex to middle, its upper side parallel with costa, its lower side somewhat curved; this blotch is cut by a narrow white streak running from immediately beneath costa beyond middle obliquely outwards to middle of disc at two-thirds from base, and a second narrow white streak from apex of wing obliquely inwards, nearly reaching extremity of first white streak: cilia reddish-fuscous. Hindwings pale fuscous-grey; cilia whitish-grey, with a dark grey line near base.

This species departs somewhat from the usual generic characters of *Tortrix* in the distinctly crested thorax, which does not however appear to me to afford a sufficient basis for generic distinction. Its markings are very eccentric and irregular, but the normal type can still be clearly traced in them.

I have only one male, taken by Mr. Miskin near Brisbane.

4. Tort. aulacana, *n. sp.*

♂. 7½‴. Head and palpi light grey or whitish, mixed with fuscous-grey. Antennæ light grey. Thorax greyish-fuscous. Abdomen light ochreous-grey, whitish on sides. Legs whitish, anterior and middle tibiæ and tarsi suffusedly banded with grey. Forewings moderate, costa moderately arched, hindmargin obliquely rounded; pale greyish-ochreous, or white coarsely irrorated with dark fuscous-grey; costa very narrowly and inner margin more broadly suffused with dark grey, costa mixed with reddish; a straight slender dark fuscous line from base beneath costa to apex, well-defined beneath, cloudy above, posteriorly rather indistinct; some irregular dark greyish-fuscous or blackish-fuscous cloudy markings, consisting of a streak from base above fold to middle, an oblique streak from centre to above anal angle, and an oblique streak from disc at two-thirds to apex, suffused together with fuscous-grey clouds so as to form a cloudy gradually dilated streak from base to hindmargin, between which and the line from base to apex is a clear rather broad longitudinal space of groundcolour, containing a short cloudy longitudinal fuscous-grey line in middle of disc: cilia pale ochreous or light reddish-fuscous towards base, whitish towards extremities, with a dark fuscous-grey line along base. Hindwings fuscous-grey; cilia whitish, with a fuscous-grey line near base.

Characterised by the cloudy but distinct longitudinal markings, the colour and intensity of which appear subject to considerable variation.

Three males taken at Mount Macedon, Victoria, and at Parramatta, New South Wales, in September.

5. Tort. peloxythana, *n. sp.*

♂. 6¾″. Head, palpi, and thorax brownish-ochreous, irrorated with dark fuscous. Antennæ dark fuscous. Abdomen dark fuscous mixed with ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings rather narrow, costa slightly arched, hindmargin obliquely rounded; ochreous-white, dorsal half below a line from middle of base to apex wholly suffused with dark grey mixed with ochreous, the groundcolour above this is irrorated with dark grey and ochreous except towards costa; markings dark grey mixed with ochreous, on dorsal half obsolete through the suffusion; basal patch indistinct, outer edge starting from one-fourth of costa, somewhat angulated above middle; central fascia oblique, moderately narrow, starting from costa before middle; a wedge-shaped elongate blotch along costa from beyond middle nearly to apex: cilia ochreous-white, near anal angle grey, with a blackish line near base. Hindwings rather dark fuscous-grey; cilia ochreous-whitish, with a dark fuscous line near base.

Distinguished amongst the fasciated species by the dark grey suffusion of the dorsal half of forewings, and the general darker colouring.

I took one specimen on the hills near Murrurundi, New South Wales, in November.

6. Tort. trygodana, *n. sp.*

♂. 6¾″. Head, palpi, and thorax pale ochreous. Antennæ ochreous-grey. Abdomen grey. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused with dark fuscous. Forewings moderate, posteriorly somewhat narrowed, costa moderately arched, hindmargin obliquely rounded; pale ochreous, with a few scattered dark fuscous strigulæ, especially towards hindmargin; inner margin regularly strigulated with dark fuscous; a dark fuscous spot on disc at one-fourth from base, representing angle of basal patch; central fascia irregular, oblique, dark fuscous, starting from beneath costa in middle, at first very slender, lower two-thirds rather broader but margins very irregular, posterior margin indistinct; a dark fuscous line from costa before apex to hindmargin above anal angle; cilia whitish-ochreous. Hindwings fuscous-grey; cilia whitish-grey, with a fuscous-grey line near base.

Closely allied to *T. philopoana* and *T. glaphyrana*, but differing from both in the darker hindwings, the scattered dark strigulæ on forewings, and the character of the central fascia, which is very irregularly margined and does not reach the costa.

One male taken amongst bush at Parramatta, New South Wales, in October.

7. Tort. philopoana, *n. sp.*

♂ ♀. 6½″-8″. Head, palpi, antennæ, and thorax pale ochreous. Abdomen whitish-ochreous. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused with fuscous-grey. Forewings moderate, in female more elongate and narrower, costa moderately arched towards base, hindmargin obliquely rounded, more obliquely in female; pale ochreous, generally with a few scattered fuscous scales; inner margin faintly strigulated with fuscous;

basal patch ochreous-fuscous, generally indistinct, sometimes well-marked, outer edge running from costa at one-fifth to inner margin at one-fourth, angulated above middle; central fascia ochreous-fuscous, oblique, running from before middle of costa to anal angle, narrow towards costa, lower two-thirds somewhat dilated, margins slightly irregular, generally with a black dot on posterior margin below middle; a small somewhat triangular, ochreous-fuscous spot on costa midway between central fascia and apex; sometimes a small cloudy spot on middle of inner margin, tending to unite with costal spot or base of central fascia; in female these markings are often more reddish-ochreous and less distinct: cilia whitish-ochreous. Hindwings whitish-grey, in female often whitish, somewhat tinged with ochreous towards apex; cilia whitish, with a faint grey line near base.

Distinguished from *T. glaphyrana* especially by the dilation of the lower portion of the central fascia, and the usually perceptible basal patch; the female does not differ in markings from the male, and is therefore very different from *T. glaphyrana*, female, which is entirely without markings, except occasionally a small dorsal spot.

I found this species abundant amongst the long grass in swampy forest near Hamilton, New Zealand, in January.

8. Tort. glaphyrana, *n. sp.*

♂. 6″-8″. Head, palpi, antennæ, and thorax pale ochreous. Abdomen whitish-ochreous, rarely greyish-ochreous. Legs whitish-ochreous, anterior and middle tibiæ and tarsi suffused with fuscous-grey. Forewings moderate, costa moderately arched, hindmargin obliquely rounded; pale ochreous; basal patch obsolete, its outer edge sometimes indicated by a row of five or six dark fuscous dots, angulated in middle; central fascia very slender throughout, oblique, running from before middle of costa to inner margin at three-fourths, brownish-ochreous, generally becoming dark fuscous on costa and inner margin, sometimes darker throughout, posterior margin always indistinct; generally there is a black dot a little beyond posterior margin of central fascia below middle; a very small somewhat triangular fuscous spot on costa at three-fourths; sometimes a faint brownish cloud, or two or three dark fuscous dots, near middle of hindmargin: cilia whitish-ochreous. Hindwings whitish-grey or pale grey, slightly ochreous-tinged posteriorly; cilia whitish, with a faint grey line near base.

♀. 7‴-8‴. Forewings rather narrower and more elongate than in male, costa less arched; unicolorous pale ochreous; usually a minute blackish dot in disc beyond middle; sometimes a small cloudy dark fuscous spot on inner margin at three-fourths: cilia whitish-ochreous. Hindwings whitish-grey, cilia whitish.

Differs from *T. trygodana* by the entire, slender, and evenly margined central fascia, and the whitish-grey hindwings; from *T. philopoana* in the male by the slenderness and absence of dilation in the central fascia, the darker fuscous markings, and the absence of the basal patch, in the female by the absence of any transverse markings.

A common species, occuring both in dry bush and in swampy places, at Sydney, Parramatta, Morpeth, and Shoalhaven, New South Wales; near Melbourne; and at Toowoomba (2,000 feet) Queensland; from October to March.

9. Tort. leucaniana, *Walk.*

(*Conchylis leucaniana*, Walk., Brit. Mus. Cat. 370; *Gelechia intactella*, ibid. 652; *Teras pauculana*, ibid. Suppl. 1781).

♂ ♀. 6½‴-8‴. Head, palpi, antennæ, and thorax pale ochreous. Abdomen whitish-ochreous. Legs ochreous-whitish, anterior and middle tibiæ and tarsi suffused with smoky-fuscous. Forewings moderate, in female narrower and more elongate, costa moderately arched, hindmargin oblique, more so in female, straight beneath apex; pale ochreous, in female sometimes pale reddish-ochreous, often slightly darker between the veins posteriorly; a few irregularly strewn black scales; generally a rather more conspicuous black dot on disc beyond middle, usually preceded by a short longitudinal cloudy-grey streak above middle: cilia pale ochreous, extremities whitish. Hindwings whitish, posteriorly greyish-tinged; cilia whitish.

Distinguishable from all its allies except *T. glaphyrana* female, by the unicolorous pale ochreous forewings; the male is much broader-winged than *T. glaphyrana* female, and even in the female the forewings are comparatively less elongate, but the females of the two species are in some cases hardly separable, except by the presence of a few scattered blackish scales in *T. leucaniana;* the males are widely different.

Appears to be generally common in New Zealand, in grassy places; I found it abundantly near Hamilton and Cambridge, on the Waikato, and also at Auckland and Wellington, in December and January.

10. Tort. centurionana, *n. sp.*

♂ 11‴, ♀ 12½‴-13‴. Head, palpi, and thorax whitish-grey, densely irrorated with dark grey. Antennæ dark fuscous, in male strongly ciliated. Abdomen pale grey or ochreous-grey. Legs grey-whitish, anterior and middle tibiæ and tarsi suffused with fuscous-grey. Forewings elongate, in female very elongate, costa rather strongly arched, hindmargin very obliquely rounded; pale reddish-ochreous, darker and with rows of scattered black scales between the veins; dorsal half of wing, a narrow cloudy streak from base to two-thirds of disc above middle, and a slender streak along costa from one-third to apex suffused with fuscous-grey; cilia white, mixed with grey, with a grey line near base. Hindwings whitish-grey, slightly darker posteriorly; cilia whitish with a faint grey line near base.

Easily known by its large size, very elongate forewings (of which the costa is still strongly arched) and cloudy longitudinal suffusion.

I took four specimens (two males, and two females) amongst dry bush at Sydney and Parramatta in the very early spring months, July and August; they appeared very sluggish and inactive.

11. Tort. concordana, *n. sp.*

♂ ♀. 6½″-8″. Head, palpi, and thorax whitish-grey. Antennæ whitish, slenderly annulated with dark fuscous. Abdomen whitish-grey, sides and anal tuft whitish-ochreous. Legs whitish, anterior and middle tarsi and tibiæ suffused with dark fuscous above. Forewings moderate, in female rather more elongate, costa rather strongly arched, hindmargin obliquely rounded; whitish-grey, very faintly ochreous-tinged, in one female with small scattered ochreous spots towards inner margin; sometimes a few scattered blackish scales towards hindmargin: cilia whitish-ochreous, extremities paler. Hindwings whitish or whitish-grey, slightly darker posteriorly; cilia whitish, faintly ochreous-tinged round apex.

Characterised by the unicolorous whitish-grey forewings; very closely allied to *T. indigestana*, but the forewings are shorter and broader (especially in male), the groundcolour is lighter, glossier, and slightly ochreous-tinged, especially in cilia, there are at most only a few scattered black scales posteriorly, and there is no reddish discal suffusion.

Larva rather stout, posteriorly somewhat attenuated, with a few whitish hairs; dull grey-green, slightly brownish tinged, spots hardly paler; head and second segment black, very glossy; anal segment ochreous. Feeds in spun-up shoots, or amongst several cylindrically-united leaves of *Hibbertia linearis* and *H. fasciculata (Dilleniaceæ);* these larvæ were found in July, and the imagos emerged in August.

Common in open bush amongst its food-plant near Sydney and Parramatta, and at Melbourne, in the spring, August and September, and again in March.

12. Tort. indigestana, *n. sp.*

♂ ♀. 5¾"-7¼". Head, palpi, and thorax whitish-grey or whitish, mixed with darker. Antennæ whitish, annulated with dark fuscous, in female somewhat suffused. Abdomen pale grey, sides and anal tuft whitish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi suffused with dark fuscous. Forewings elongate, rather narrow, in female more elongate, costa moderately arched, hindmargin very obliquely rounded; pale ashy-grey, mixed with darker, and irregularly irrorated with black scales; a more or less distinct reddish suffusion on disc beyond middle: cilia whitish, with a faint grey line near base.

Near *T. concordana*, but rather smaller, the forewings narrower and more elongate, with the hindmargin more oblique, the groundcolour darker and coarsely irrorated with black, with a mixture of reddish in disc.

Larva undistinguished from that of *T. concordana;* feeding in spun-up shoots or amongst joined leaves of *Hibbertia linearis*, in July.

Less common than the preceding; occurring in similar localities near Sydney, in August and September.

13. Tort. aërodana, *n. sp.*

♂. 4¾"-5¼". Head, palpi, and thorax whitish-grey mixed with dark grey. Antennæ dark fuscous-grey, sometimes with whitish annulations. Abdomen light grey, anal tuft whitish. Legs grey-whitish, anterior and middle tibiæ and tarsi suffused with dark fuscous. Forewings narrow, costa slightly arched, hindmargin very obliquely rounded; dark grey, irrorated with ashy-whitish and black scales; sometimes there is a distinct ochreous slender oblique fascia from middle of costa to inner margin before anal angle, and costal spot at three-fourths, but these are often imperceptible; cilia whitish-grey mixed with darker. Hindwings dark grey; cilia paler, with a dark grey line near base.

♀. 6½‴-7‴. Head, etcætera, as in male. Abdomen whitish-ochreous. Forewings with costa somewhat more arched towards base, hindmargin very oblique; paler than in male, without trace of fascia: cilia whitish. Hindwings whitish, posteriorly whitish-grey; cilia white, with a faint grey line near base.

Allied to *T. indigestana*, but the male is much smaller and narrower-winged, the forewings much darker, often with a distinct ochreous fascia and costal spot, and the hindwings dark grey; the female, being paler, and with whitish hindwings, is hardly separable from *T. indigestana* female, but appears more uniform pale grey, with less distinct blackish irroration, and without any reddish tinge in disc.

I took eight specimens (six males, and two females) amongst dry low heathy scrub near Hamilton, on the Waikato, New Zealand, in January.

14. Tort. siriana, *n. sp.*

♂. 4¾‴-5½‴. Head, palpi, and thorax deep brownish-ochreous. Antennæ ochreous, annulated with dark fuscous. Abdomen blackish-fuscous. Legs pale greyish-ochreous, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous. Forewings narrow, costa gently arched, hindmargin very obliquely rounded; deep brownish-ochreous, generally mixed with dark fuscous posteriorly, sometimes throughout; usually a distinct blackish dot on disc beyond middle: cilia brownish-ochreous, at anal angle mixed with dark fuscous. Hindwings blackish; cilia blackish, extremities ochreous round apex.

♀. 6½‴. Head, et cætera, as in male. Abdomen whitish-ochreous. Forewings rather more elongate, apex more acute, hindmargin very oblique; unicolorous reddish-ochreous; cilia ochreous, reddish-tinged towards apex, extremities whitish towards anal angle. Hindwings whitish, apex faintly greyish; cilia whitish.

A very distinct species, in form resembling *T. aërodana;* characterised by its small size, and the uniform deep brownish-ochreous or reddish-ochreous forewings; the hindwings are blackish in male, whitish in female.

I found the male abundant (and took one female), in the hot sunshine amongst long grass in a very restricted locality on the skirts of virgin forest near Hamilton, New Zealand; they appeared to fly amongst the tops of the grass, but were difficult to see.

15. Tort. concolorana, *n. sp.*

♂. 5½″. Head, palpi, and antennæ smoky-grey. Thorax ochreous-yellow. Abdomen dark grey. Legs whitish, anterior and middle tibiæ and all tarsi suffused with dark grey. Forewings moderate, costa moderately arched, hindmargin obliquely rounded; unicolorous ochreous-yellow; cilia slightly paler, extremities whitish. Hindwings smoky-grey, posteriorly darker; cilia smoky-grey, with a dark grey line near base.

In form of wing resembling the following; recognisable by the unicolorous yellow forewings, and the sharply contrasted dark grey head.

One specimen, taken in dry bush near Sydney in September.

16. Tort. standishana, *Newman.*

(*Tortrix standishana,* Newman, Trans. Ent. Soc. Lond., N.S. III., 286).

♂ ♀. 5¼″-7½″. Head ochreous-yellow. Palpi dark fuscous. Antennæ dark fuscous. Thorax dark purplish-fuscous. Abdomen ochreous-grey. Legs whitish-ochreous, anterior and middle tibiæ and all tarsi suffused with dark fuscous. Forewings moderate, costa gently arched, hindmargin obliquely rounded; ochreous-yellow, with a fuscous-purple band along hindmargin, moderately broad towards costa, gradually attenuated to anal angle: cilia yellowish mixed with grey, extremities paler. Hindwings fuscous-grey; cilia grey, with a dark fuscous line near base.

A small species, but conspicuously distinct through the purplish hindmarginal band on the yellow forewings. Newman's description appears certainly referable to this species.

Rather common in low dry bush near Sydney, flying near the ground towards sunset; also at Blackheath (3,600 feet) on the Blue Mountains, and I have received specimens from Coomooboolaroo, near Duaringa, Northern Queensland; Newman's type was from the ranges near Melbourne. It is on the wing from August to October, and again in March.

20. DIPTERINA, *n. g.*

Thorax generally with a very small crest. Antennæ in male somewhat thickened, biciliated with long fine cilia. Palpi moderate, porrected, second joint triangularly rough-scaled, terminal joint almost concealed. Forewings rather elongate, costa in male simple, evenly arched, hindmargin very oblique, almost sinuate, rounded. Hindwings rounded-trapezoidal, not broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 from a point, 5 slightly approximated to 4 at base, 6 and 7 stalked.

Allied to *Tortrix* and *Arotrophora*, but distinguished from both by the stalking of veins 6 and 7 of hindwings, the presence of a distinctly marked secondary cell in forewings, and the long fine double cilia of the antennæ in male. In superficial appearance the species rather remind one of *Sciaphila*.

I have four Australian and one New Zealand species, which may be thus arranged:

A. Forewings pale yellow, with blackish markings .. ..1. tasmaniana.
B. Forewings whitish.
  1. Central fascia straight, oblique .. ..2. tribolana.
  2. Central fascia angulated .. .. ..5. imbriferana.
C. Forewings grey, with darker markings ..4. rupicolana.
D. Forewings dark purplish-fuscous, with blackish transverse lines .. .. ..3. refluana.

1. Dipt. tasmaniana, *Walk.*

(*Conchylis tasmaniana*, Walk., Brit. Mus. Cat. 365).

♂ ♀. 5″-7″. Head and palpi deep yellow. Antennæ whitish, annulated with dark fuscous, basal joint yellow. Thorax blackish-fuscous. Abdomen dark fuscous. Legs yellowish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings subtriangular, costa hardly arched, hindmargin obliquely rounded; pale yellow, tinged with orange towards base; an indistinct blackish dash on base of inner margin; a blackish subtriangular patch on costa towards base, its apex reaching two-thirds across wing; a moderately broad straight blackish fascia from middle of costa to inner margin slightly beyond middle, its edges slightly irregular; a black dot on costa beyond it; a blackish hind-marginal band, rather broad on costa, with a blunt projecting tooth above middle, thence attenuated to anal angle, and slenderly produced along inner margin to meet central fascia; in this band is usually enclosed a yellow dot on costa: cilia yellow, black at apex and anal angle, and suffusedly blackish along base. Hindwings fuscous-grey, towards apex dark fuscous; cilia fuscous-grey with a dark fuscous line near base.

A very distinct species, not liable to be confused with any other.

Mr. G. H. Raynor took this species in plenty at Melbourne in gardens, during September and October; Walker's type is from Tasmania.

2. Dipt. tribolana, *n. sp.*

♂ 6½‴-7‴. Head and palpi whitish-ochreous mixed with fuscous. Antennæ whitish-ochreous, annulated with dark fuscous. Thorax dark fuscous, shoulders mixed with whitish-ochreous. Abdomen dark fuscous. Legs ochreous-whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings subtriangular, costa slightly arched, hindmargin obliquely rounded; whitish, irregularly irrorated with fuscous; costa and inner margin coarsely strigulated with dark fuscous, last three costal strigulæ larger and subquadrate; basal patch dark ochreous-fuscous mixed with black, towards base mixed with whitish, its outer edge extending from one-fifth of costa to one-fourth of inner margin, sharply angulated in middle; central fascia rather narrow, oblique, from before middle of costa to inner margin before anal angle, dark ochreous-fuscous mixed with blackish, its posterior margin with an obtuse projecting tooth below middle; beyond central fascia is an obscure greyish-fuscous cloud towards costa, suffusedly connected with it; a dark ochreous-fuscous hindmarginal band, mixed with blackish, broadest in middle, attenuated each way to apex and anal angle: cilia whitish-ochreous, towards base brownish-ochreous mixed with blackish. Hindwings dark fuscous-grey; cilia grey, with a dark fuscous line near base.

Allied to *D. tasmaniana*, which it resembles in form of wing and position of markings; but differing widely in the whitish groundcolour, and dark ochreous-fuscous tint of the markings, and the complete basal patch.

Mr. G. H. Raynor took five specimens at Mount Macedon, Victoria, in December.

3. Dipt. refluana, *n. sp.*

♀. 9½‴. Head, palpi, and thorax dark purplish-fuscous mixed with blackish. Antennæ light purplish-fuscous, annulated with blackish. Abdomen dark ochreous-grey. Legs whitish-ochreous mixed with grey; anterior and middle tibiæ and tarsi dark fuscous with pale rings. Forewings moderately broad, costa arched towards base, hindmargin obliquely rounded; dark purplish-fuscous, suffused with purplish-grey, and crossed by numerous irregular transverse broken blackish lines; a black tooth of scales on inner margin near base: cilia dark purple-fuscous, with a darker central line. Hindwings grey, spotted with dark fuscous-grey; cilia grey, with a dark fuscous-grey line near base.

Allied to *D. rupicolana*, from which it is separated by the dark purplish-fuscous colour and transverse blackish lines; the male is unknown to me, but might be expected to have more distinct markings, as in *D. rupicolana*.

One female taken by Mr. G. H. Raynor near Melbourne.

4. Dipt. rupicolana, *n. sp.*

♂ ♀. 6¾″-9″. Head, palpi, and thorax dark grey mixed with paler. Antennæ whitish-grey, annulated with dark fuscous. Abdomen pale ochreous-grey. Legs whitish-grey, anterior and middle tibiæ and all tarsi dark fuscous with pale rings. Forewings moderately broad, in male dilated posteriorly, costa moderately arched, hindmargin obliquely rounded; light grey, more or less suffused with darker grey, and with numerous scattered black transverse strigulæ; costa and inner margin strigulated with blackish, last five costal strigulæ dilated into small subquadrate spots; extreme base of wing dark fuscous-grey; outer edge of basal patch represented by an irregular interrupted blackish line from one-fifth of costa to one-fifth of inner margin, angulated in middle; central fascia narrow, oblique, dark grey, irregularly margined with blackish, in female often obsolete, running from before middle of costa to beyond middle of inner margin, attenuated at lower extremity; a small cloudy dark grey irregular spot on anal angle, and another on hindmargin above it, connected with the five subquadrate costal spots by curved rows of blackish scales: cilia grey, with two obscure blackish lines. Hindwings whitish-grey spotted with dark grey; cilia whitish-grey, with a dark grey line near base.

A dull-looking species, distinguished by its grey colouring, with darker grey markings; the female is more obscure than the male.

Tolerably common in shady well-sheltered spots in the bush, generally amongst rocks, near Sydney and Parramatta, and also taken at Murrurundi, and at Blackheath on the Blue Mountains; an early spring insect, occuring in August and September, and on the mountains in October.

5. Dipt. imbriferana, *n. sp.*

♂ ♀. 4‴-5½‴. Head and palpi whitish mixed with grey. Antennæ whitish. Thorax fuscous-grey, mixed with whitish on sides. Abdomen grey, sides and anal tuft whitish. Legs whitish, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous. Forewings rather elongate, costa moderately arched, hindmargin obliquely rounded; whitish, sometimes faintly clouded with grey; costa and inner margin obscurely strigulated with fuscous-grey; basal patch light fuscous-grey, outer edge extending from one-fourth of costa to one-fourth of inner margin, angulated in middle; central fascia fuscous-grey, margined with dark fuscous, moderately narrow towards costa, rather broader beneath, running from middle of costa to middle of inner margin, angulated in middle; an obscure fuscous-grey cloudy spot on anal angle; a dark fuscous-grey spot on costa at three-fourths, connected with middle of hindmargin by an obscure line; apex sometimes clouded with grey: cilia whitish, with a grey line near base. Hindwings grey, darker posteriorly; cilia grey, with a darker line near base.

Not very near any of the other species; characterised by the whitish groundcolour, grey markings, and especially the angulated central fascia.

I took five specimens amongst bush near Auckland and Wellington, New Zealand, in January.

21. AROTROPHORA, *n. g.*

Thorax smooth. Antennæ in male somewhat thickened, strongly dentate, ciliated with tufts of hairs. Palpi very long, second joint elongate-triangularly scaled, attenuated to apex, terminal joint short, distinct. Forewings elongate, costa in male simple, gently and evenly arched, hindmargin obliquely rounded or nearly straight. Hindwings rather elongate, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin. Hindwings with veins 3 and 4 rising from a point, 5 approximated to 4 at base, 6 and 7 separate.

Larva sixteen-legged, stout, feeding in seed-heads.

Allied to *Tortrix*, but distinguished by the long palpi, and by the antennæ of male, which are very strongly dentate, and furnished with a tuft of cilia on the apex of each tooth.

I have five Australian and one New Zealand species, thus tabulated:

A. Head and thorax ochreous-yellow ..2. xythopterana.
B. Head and thorax dark fuscous .. ..1. incessana.
C. Head and thorax whitish, sometimes greyish-tinged.
  1. Forewings without ochreous tinge ..5. confusana.
  2. Forewings with more or less reddish-ochreous suffusion.
    a. A well-defined straight dark reddish streak from apex to anal angle ..3. arcuatalis.
    b. No such streak.. .. .. ..4. lividana.
D. Head and thorax rather dark grey ..6. atimana.

1. Arotr. incessana, *Walk.*

(*Teras incessana*, Walk., Brit. Mus. Cat. 304).

♂. 6″-8″. Head, palpi, antennæ, thorax, and abdomen dark fuscous; palpi long. Legs whitish-ochreous, anterior and middle pair and posterior tarsi suffused with dark fuscous above. Forewings subtriangular, posteriorly dilated, costa moderately arched, apex rather acute, hindmargin sinuate, oblique; reddish-fuscous, indistinctly strigulated with darker, with dark fuscous markings; basal patch obscure, its outer edge nearly straight, not oblique, most distinct on inner margin; central fascia moderately broad, not oblique, from middle of costa to middle of inner margin, its anterior edge straight, well-defined, its posterior edge suffused, connected with an obscure dark cloud on disc beyond middle; a triangular spot on costa at three-fourths; a short erect streak from anal angle, reaching nearly half across wing: cilia pale reddish-fuscous, with a blackish line along base. Hindwings fuscous-grey, indistinctly spotted with darker; cilia pale grey, with a darker line near base.

Distinguished amongst its allies by the reddish-fuscous ground-colour, and especially by the well-defined straight, not oblique, anterior edge of central fascia.

I took one specimen amongst bush near Auckland, New Zealand, in January; and there are two others in the British Museum from the same locality, agreeing with mine in all respects.

2. Arotr. xythopterana, *n. sp.*

♂. 8½″. Head and thorax ochreous-yellow. Palpi very long, ochreous-yellow above, ochreous-fuscous beneath. Antennæ dark fuscous, basal joint yellow. Abdomen dark grey. Legs grey-whitish, anterior and middle tibiæ and all tarsi suffused above with dark fuscous-grey. Forewings moderately broad, costa rather strongly arched, hindmargin straight, oblique, rounded beneath; pale yellowish-ochreous, apical half (beyond a line from costa at two-fifths very obliquely outwards to disc beyond middle, sharply angulated and continued obliquely inwards to middle of inner margin) dark reddish-ochreous-fuscous, strewn with numerous small dark leaden-grey spots; a dark fuscous dot at the angulation; a small cloudy dark reddish-ochreous-fuscous spot, mixed with grey, on inner margin before middle; a suffused dark ochreous-grey cloud from apex to inner margin at two-thirds: cilia dark fuscous-grey, with two blackish lines. Hindwings light fuscous-grey spotted with darker; cilia grey, with two dark grey lines.

A distinct and handsome species, characterised by the well-marked contrast between the pale yellowish basal and dark ochreous-brown apical halves of the forewings; allied to *A. arcuatalis*, but broader-winged, costa more arched, and hindmargin rather less oblique.

One male beaten from a *Banksia* near Parramatta, New South Wales, in March; a second from *Banksia spinulosa* at Mittagong.

3. Arotr. arcuatalis, *Walk.*

(*Scopula arcuatalis*, Walk., Brit. Mus. Cat. (Pyral.) ; *Eromene transcissella*, ibid. Suppl. 1763).

♂ ♀. 7¾″-11″. Head and thorax whitish, shoulders whitish-ochreous. Palpi very long, whitish, externally on sides pale ochreous or reddish-ochreous. Antennæ whitish-ochreous, basal joint white. Abdomen whitish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi suffusedly banded with grey. Forewings elongate, triangular, costa slightly arched near base, thence nearly straight, hindmargin straight, oblique; whitish, very finely irrorated with grey, with reddish-ochreous markings; a dark reddish-ochreous streak from base beneath costa to one-third thence bent obliquely downwards to centre of disc, and again upwards to beneath costa at two-thirds, sometimes faintly continued to costa before apex; the space between this line and costa is grey, suffused with reddish-ochreous along costa, sometimes wholly reddish-ochreous; a dark reddish-ochreous streak along submedian fold from base to middle; a black dot on disc at two-thirds; a straight dark reddish-ochreous streak, posteriorly darker and sharply defined, from apex to just before anal angle, and a more slender dark reddish-ochreous streak along hindmargin from apex to below middle: cilia whitish, irrorated with grey, with a dark grey line near base. Hindwings whitish-grey; cilia whitish-grey, with a dark grey line near base.

Always recognisable by the distinct dark reddish-ochreous lines on the grey-whitish forewings; variable in size, but always considerably larger and rather broader-winged than the three following species; the palpi are also comparatively longer.

Larva stout, cylindrical; rather dull uniform carmine-pink; head black. Feeds in the flower-cones of *Banksia serrata (Proteaceæ)*, burrowing through the substance of the cone whilst the seeds are forming. Larvæ found in July and August emerged in October, and others found in January emerged in February.

Rather common at Sydney and Parramatta, and at Blackheath on the Blue Mountains (3,600 feet), from October to December, and in February; the imago is inactive, and when beaten out usually flies straight to the ground.

4. Arotr. lividana, *n. sp.*

♂ ♀. 5‴-6‴. Head and thorax whitish tinged with grey. Palpi long, whitish mixed with grey. Antennæ whitish-grey. Abdomen whitish-grey. Legs whitish, anterior and middle tibiæ and tarsi banded with dark fuscous-grey. Forewings elongate, narrow, costa slightly arched, hindmargin straight, very oblique; whitish, coarsely irrorated with grey, and more or less strongly suffused with dark grey along margins, more widely along basal two-thirds of costa and along hindmargin; costa and inner margin strigulated with darker; a dark grey spot, often suffused with reddish-ochreous, above submedian fold at one-third; an ill-defined dark grey cloud, more or less suffused with reddish-ochreous, in middle of disc, confluent with costal suffusion; the reddish-ochreous suffusion is sometimes more or less distinctly produced to base, and extends to costa: cilia whitish-grey, with two dark fuscous-grey lines. Hindwings pale fuscous-grey; cilia whitish-grey, with a fuscous-grey line near base.

This and the two following species are very closely allied together, and differ from the three preceding by their small size, and narrow wings, with more oblique hindmargin. *A. lividana* differs from both *A. confusana* and *A. atimana* by the always perceptible reddish-ochreous discal suffusion, more whitish groundcolour, and grey marginal suffusion.

Six specimens taken at Sydney and Bulli, New South Wales, and near Brisbane, Queensland, in September and October; this and the two following species all seem to frequent species of *Banksia*, and their larvæ probably feed in the same way as *A. arcuatalis*.

5. Arotr. confusana, *Walk.*

(*Pædisca confusana*, Walk., Brit. Mus. Cat., 381).

♂. 5‴-5½‴. Head and thorax whitish-grey. Palpi long, whitish-grey mixed with darker. Antennæ whitish-grey. Abdomen whitish-grey, towards base and at apex whitish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings moderately elongate, costa moderately arched, hindmargin straight, oblique; whitish-grey, irrorated with darker; costa and inner margin obscurely strigulated with dark fuscous-grey; an indistinct somewhat triangular dark fuscous-grey spot on inner margin at one-third; an outwardly oblique dark fuscous-grey streak from costa at one-third, reaching half across wing; a rather broader oblique wedge-shaped dark fuscous-grey spot on middle of costa, meeting a small white spot in middle of disc, which is connected with inner margin beyond middle by an indistinct dark fuscous-grey cloud;

a triangular fuscous-grey spot on costa at three-fourths; an oblique fuscous-grey streak near hindmargin from anal angle, not reaching apex; a dark fuscous-grey line along hindmargin: cilia whitish-grey, with two dark grey lines. Hindwings whitish, faintly greyish-tinged; cilia whitish, with a faint grey line near base.

Rather broader-winged than either *A. lividana* or *A. atimana;* more greyish-tinged than *A. lividana,* without reddish-ochreous suffusion, and with well-defined dark grey transverse markings on costal half of wing, which are not found in *A. lividana;* lighter than *A. atimana,* with less suffused and more numerous markings differing in position.

Eight specimens taken amongst *Banksia* near Sydney, in October, and again in March and April.

6. Arotr. atimana, *n. sp.*

♂ ♀. 4¾″-5⅓″. Head, palpi, and thorax rather dark grey. Antennæ pale grey. Abdomen whitish-grey. Legs whitish, anterior and middle tibiæ and tarsi banded with dark fuscous. Forewings elongate, narrow, costa gently arched, hindmargin straight, very oblique, anal angle almost obliterated; light grey, very indistinctly strigulated with darker; a suffused oblique dark fuscous-grey streak from costa at one-fourth, and another inwardly oblique from costa in middle, their extremities confluent in middle of disc; three or four suffused subquadrate dark fuscous-grey spots on costa between middle and apex; some indistinct dark grey transverse streaks towards inner margin: cilia whitish-grey, without distinct lines. Hindwings wihitish-grey at base, darker grey posteriorly; cilia whitish-grey.

Narrower-winged than either of the other species, and with extremely oblique hindmargin; also rather smaller and darker than either *A. lividana* or *A. confusana,* with two suffused darker streaks forming a triangle with costa before middle.

Four specimens taken near Sydney in August and January.

The next paper will include the species of the families *Grapholithidæ* and *Conchylidæ*, completing the *Tortricina;* as an appendix to which I propose to add a list of Walker's descriptions of the group, referred to their proper species and genera, by way of index.

ADDENDA.

Whilst the foregoing descriptions were passing through the press I have obtained an additional new species, and further information respecting three species described above, particulars of which are here subjoined.

Capua parmiferana, *n. sp.*

♂. 5¼″. Head pale greyish-ochreous on crown, face dark fuscous. Palpi dark fuscous. Antennæ greyish-ochreous. Thorax light greyish-ochreous. Abdomen light grey. Legs light grey, anterior and middle tibiæ and tarsi dark fuscous with light greyish-ochreous rings. Forewings rather narrow, costa gently arched, bent before middle, hindmargin oblique, slightly sinuate; pale greyish-ochreous, with scattered faint pale grey slightly metallic transverse strigulæ; basal patch indicated by a few dark fuscous scales in disc and towards inner margin about one-third; a purplish-grey rounded-triangular patch extending along costa from two-fifths almost to apex, and reaching half across wing, its anterior margin bordered by a strong blackish-fuscous streak, posterior margin with several irregular blackish-fuscous spots, included portion of costa also spotted with blackish-fuscous; a slender suffused blackish-fuscous streak along upper half of hindmargin; a few blackish-fuscous scales at anal angle: cilia pale greyish-ochreous, indistinctly chequered with purplish-grey, bars becoming confluent on basal half towards upper part of hindmargin. Hindwings rather light grey; cilia light grey, darker near base, extreme base whitish.

A very distinct species, allied to *C. vacuana* and *C. hemicosmana*, but readily known by the dark costal triangular patch.

One male, taken in a gully near Sydney in October.

Cryptoptila immersana, *Walk.*

The discovery of the larva of this insect has revealed the very extraordinary and startling fact that it is the female of *Cacœcia australana*, Lw. It becomes now questionable whether the costal tuft of the hindwings, being confined to the female sex, is a sufficient basis for generic distinction, curious as it is. I think it will perhaps be better to regard the insect for the present as an extreme type of *Cacœcia*, but further knowledge of the group may confirm the original separation of the genus. The specific name *australana*, Lw. will be retained as the oldest.

Larva elongate, cylindrical, when at rest curiously flattened posteriorly, head rather large, anal segment flattened; dark bluish-grey above, yellowish-green on sides; spots raised, rather large, greenish-yellowish; head and second segment whitish-bluish, head with four large black spots on posterior margin, and some black marks round mouth; second segment with an oblique linear black mark on each side; anal segment pale whitish-blue. It feeds in folded and irregularly joined leaves of *Hedera* and *Lonicera* (garden ivy and honeysuckle); also, according to Lewin, on *Embothrium speciosissimum*, so that it is probably polyphagous. These singular larvæ were found abundantly towards the end of August near Parramatta, and imagos appeared about the end of September.

Tortrix trygodana.

I have since taken this species in abundance near Sale, Gippsland, flying very readily in somewhat swampy grass plains in September. It is very variable in appearance; the description applies to a well-marked type, but the markings are very commonly more or less wholly obsolete, represented only by a few coarse scattered dark fuscous scales. The species is however a good and distinct one, separated, as indicated above, from its nearest allies by the darker hindwings.

Arotrophora xythopterana.

Larva moderately stout, cylindrical, rather tapering posteriorly; dull bluish-grey-green, spots darker; head and second segment black. It feeds in a short stiff silken tube amongst leaves of *Lomatia silaifolia (Proteacæ)*, discolouring them conspicuously. Pupa in a firm silken cocoon covered with refuse, within the end of the tube.

The larvæ were found in July, and I bred two imagos (male and female) at the beginning of August.

ON A SPECIES OF THE PHASMATIDÆ DESTRUCTIVE TO EUCALYPTI.

By WILLIAM MACLEAY, F.L.S.

At a meeting of this Society last month, Mr. C. S. Wilkinson, the Government Geologist, exhibited three specimens of a *Phasma* which he had obtained a week or two previously in the vicinity of the Binda Caves, in the county of Westmoreland. He informed the meeting that he had found these insects in amazing numbers in that locality; that the trees for miles around were completely denuded of leaves, and that the dead and dying insects were lying beneath the trees almost in heaps.

The occurrence of a *Phasma* in such numbers is a very remarkable fact, and perfectly new as far as my experience goes. I judge also from observations made at the time of Mr. Wilkinson's announcement by the members present that all were equally struck with the unusual character of the occurrence. The *Phasmidæ* or *Phasmatidæ* as they are now more properly called, are, as we know, all leaf-eaters, and it is rare in any part of the country in the summer season to find a gum tree without a few of these insects grazing on it. But, though very widely and generally distributed, this is the first instance I believe recorded of one of the family being found in such multitudes as to cause the entire destruction of large areas of forest. Mr. Wilkinson's discovery shows, however, that such cases occur, and the question will naturally arise in many minds: "May not the hitherto unaccountable death of gum trees over large areas in different parts of the country be due to the occasional superabundance of the leaf-eating *Orthoptera*? Among the many causes suggested for the dying out of the gum tree over large areas, as may be seen for instance throughout a large portion of the Lake George Basin, I have heard the opossum named, and this probably, because observers may have noticed the dying trees looking as if their leaves had been eaten; but I never could believe that an animal which, like the opossum, is fond of travelling long distances at night in search of food would fix himself to leafless trees for a period long enough to cause their death. But Mr. Wilkinson's *Phasma* clearly does denude trees completely of their leaves, and it is inevitable that a tree submitted to such a process for two or more consecutive years must die.

From what is known of the habits of the *Phasmatidæ*, I should say that they are the most likely of all insects to retain their position on a tree or in a mass of trees as long as they possibly can, and that when their food supply is exhausted by the death of the tree, they drop to the ground and die. Many of the *Phasmatidæ*, no doubt, have wings, and Mr. Wilkinson's species rather large ones; but, unlike their saltatorial and migratorial brethren, the *Gryllidæ* and *Locustidæ*, they seldom use them, and never take long flights. Among the *Phasmatidæ* most, if not all, the adult insects die at the beginning of winter, dropping off the trees as soon as the frosts set in, but they have previously fastened their egg-cases securely on the upper branches, so that the warmth of spring produces an abundant crop of young to complete the destruction commenced by their parents.

Mr. Wilkinson has kindly presented me with the specimens he exhibited at last meeting. I find them to be of a new and undescribed species, closely allied to the well-known Sydney species *Podocanthus typhon*, but differing in some important particulars. I name it after its discoverer.

Podocanthus Wilkinsoni.

Head above, behind the antennæ, with several impressed longitudinal lines, antennæ twenty-four jointed, about the length of the anterior legs in the male, shorter in the female. Prothorax narrower than the head, and becoming narrower to its junction with the mesothorax, its length being about equal to the length of the head behind the antennæ; the mesothorax is rather narrower and scarcely longer than the prothorax except at its base, where it widens out; it is covered beneath and on the sides with small tubercles, and on the back with a double row of five larger tubercles; the metathorax is longer than the mesothorax, and much wider; it is sharply tubercutated beneath, as are also, though in a less degree, the abdominal segments. The tegmina are rather pointed—in the female half the length of the wings, in the male about one-third. The wings are moderately large and equal in both sexes. The legs are rather short; the hind femora strongly dentated beneath on the inner and outer edge, with a deep groove between; the intermediate femora are armed in the same way, but not so strongly; and the anterior are grooved beneath, but not dentated. The basal joint of the tarsi is a little the longest, except in the intermediate legs.

The specimens have been in spirits and therefore it is impossible to make out the colouration with certainty, but the body seems to have been of a reddish-brown, almost black beneath, the wing coverts yellowish, with the median carina brown, the costal area of the wings brownish-yellow, and the wings themselves hyaline, without any visible rosy tint. Length of male three inches six lines; the female is not longer nor bulkier than the male. This uniformity of size in the sexes, if constant, is, I believe, quite unprecedented in this family of insects.

If it should be found that the ravages of this or any other species of the *Phasmatidæ* are the causes of the wide-spread destruction of trees now going on in many parts of the colony, it will, I think, be a simple matter to limit, where the timber is of sufficient value, the extent of the injury by clearing a wide belt round infested spaces.

NOTES AND EXHIBITS.

Dr. Cox exhibited a fine specimen of *Cypræa princeps* from Warrior Reef, Torres Straits, a rare shell, hitherto known only from the Red Sea. Also a specimen of ancient carving from the Solomon Islands, representing probably a deity holding a mask, and from New Zealand a "Meri" made from the lower jaw bone of a whale, and a grotesque figure of Greenstone the property of W. J. Dangar, Esq., of Neotsfield.

Mr. Brazier exhibited *Amplexa turrita,* described in Professor Tate's paper. Also specimens of *Ancylus Australicus* and *Limnæa papyracea.*

◆

WEDNESDAY, MAY 25TH, 1881.

W. J. Stephens, Esq., M.A., in the Chair.

MEMBER ELECTED.

J. J. Fletcher, Esq., M.A., Parramatta.

DONATIONS.

Report of Zoological Station Naples, for 1880.

Proceedings of the Finland Society of Botany and Natural History for 1875-77 and 187-76 and 78.

On Insect Variety, by A. H. Swinton.

Proceedings of Boston Society of Natural History, Part 2 and 3, Vol. XX.

Plants of North-west Australia, by Baron F. von Mueller, K.C.M.G., &c.

Journal of Conchological Society.

PAPERS READ.

ON SOME NEW AUSTRALIAN BRACHYURA.

BY WILLIAM A. HASWELL, M.A., B.Sc.

Paramithrax spatulifer, *n. sp.*

Carapace armed with a mesial longitudinal row of four spines; the first two conical, acute, the first longer than the second, both situated on the posterior portion of the gastric region; the third situated on the cardiac region, broad, antero-posteriorly compressed, and bifid; the last, on the posterior border, broad, spatulate, heart-shaped; two long sub-acute spines on each branchial region, the anterior directed outwards, upwards and slightly forwards, the posterior directed outwards, upwards and backwards. A compressed bifid spine on the lateral border of the branchial region. Rostrum formed of two rather slender, widely divergent cornua, each of which is bifurcate at the tip—the inner branch being much the smaller, and sometimes bifid—and has some irregular teeth along each border. Upper orbital margin produced upwards into a bifurcate process; three post-orbital spines, the last the broadest and obliquely truncate. Basal joint of the antennæ with a tubercle at the proximal end of the outer border. a spine at its distal end, and another at the antero-internal angle. Sub-hepatic and pterygostomial regions with one or two spiniform tubercles. External maxillipedes with scattered granules and with a longitudinal raised granular line on the ischium. Chelipedes in the male having the merus armed above with four compressed, cristiform teeth of which the last is broader than the rest and bifid, and four below; the carpus with two sinuous or entire crests, separated by a deep groove; the propodos smooth, slightly dilated, its digital prolongation and the mobile dactylos each with a rounded tooth at their base, and meeting only near their apices, where they are armed with a row of about half a dozen small teeth. Chelipedes of the female differing from those of the male in having the propodos smaller, the digits less arched and without a tooth at the base. First pair of ambulatory legs longer than the rest, as long as the carapace and rostrum; last pair a little more than three-fourths of the length of the first; all four pairs covered with hooked hairs and with a spine at the end of their merus-joint. Carapace ornamented with bunches of hooked hairs. Total length $\frac{13}{8}$ths inch; breadth from tip to tip of anterior branchial spines nearly an inch.

Hab. Port Stephens, dredged in about five fathoms.

This species belongs to the section of the genus including *Chlorinus acanthonotus* of Adams and White, *C. longispina* of De Haan, *C. aculeatus* of Milne-Edwards and *Paramithrax halimoides*, Miers, from all of which it is distinguished by the shape and arrangement of the spines on the carapace.

Tiarinia elegans, *n. s.*

Carapace elongate-triangular. Surface pitted, especially on the branchial and cardiac regions; gastric regions with several tubercles, the largest situated in the middle line near the posterior boundary of the region, laterally compressed, subacute; cardiac region with a prominent conical elevation; branchial regions each with two conical prominences, with a small tubercle in front of them placed in an oblique line. Rostrum forming about one-third of the entire length, formed of two slender cornua which are contiguous to near the apex, where each curves outwards and ends in an acute point. Upper orbital margin not prominent. Merus of chelipedes punctate, with a few tubercles above and below; propodos punctate, compressed, with a tooth above the articulation with the carpus. Finger widely gaping, meeting only at their tips· Ambulatory legs long and slender, with a few scattered tubercles on the merus-joints. Length $\frac{9}{16}$ths inch; greatest breadth $\frac{6}{16}$ths inch.

Hab. Broughton Islands, near Port Stephens, twenty-five fathoms.

Xanthodes atromanus, *n. s.*

Allied to *X. notatus*, Dana; distinguished from it mainly by having a prominent triangular tooth at the inner angle of the lower orbital border; the chelipedes not very unequal, the carpus of both slightly tuberculate externally, and with two pointed tubercles on its inner aspect, the propoda with a deep longitudinal groove on the outer surface near the upper border, the larger hand with two and the smaller with three longitudinal rows of tubercles below this; the fingers black,—the black extending backwards for some distance on the palm. Length $\frac{7}{16}$ths inch; breadth $\frac{11}{16}$ths.

Hab. ?

This species is distinguished from *X. pachydactylus*, A. M.-Edwards, by the presence of the rows of tubercles on the outer surface of the hands, and other points.

Panopæus acutidens, *n. s.*

Carapace moderately convex, with a series of granules and granular hairy tubercles in front and at the sides; a long curved granular hairy ridge extending inwards and slightly forwards from near the base of the fourth lateral tooth; smooth behind and in the centre. Front four-lobed, the median lobes broad, rounded, separated by a rounded excavation; lateral lobes narrower and rather more prominent. Orbital margin granular, external hiatus wide. Antero-lateral margin with five wide compressed teeth, the first low and rounded, the second larger, but truncate, the third a little longer than the second and subacute, the fourth and fifth sub-conical, acute. Chelipedes unequal, the right larger than the left, its carpus with two conical spines on the inner border, propodos dilated, with two or three small tubercles on its inner surface, carpus and propodos ornamented with small granules mostly disposed in transverse rows and beset with short bristles; fingers stout, with rounded teeth, hooked at the tips; left chelipede with the propodos narrower than that of the right, the fingers very long and slender, hooked at the tips and armed with triangular teeth. Abdomen of the male bordered with a close fringe of long hairs. Length of carapace $1\frac{1}{16}$th inch, breadth $1\frac{3}{4}$ths inch.

Hab. Port Darwin.

A near ally of *Panopeus dentatus*, Adams and White, but distinguished by the form of the antero-lateral teeth, etc.

Pilumnus monilifera, *n. s.*

Surface convex, smooth, regions faintly defined; front divided by a deep notch into two prominent rounded lobes with granulated margins. A conical tooth between the front and the internal orbital hiatus. Borders of the orbit with a series of prominent granules. Antero-lateral borders with four teeth, of which the first is inconspicuous, each tooth capped by a cluster of granules. A cluster of three or four granules situated close together on either side of the middle line between and rather behind the orbits; an oblique row of prominent granules on either side near the lateral borders continuous behind with the granules of the third lateral tooth; a short row of three or four granules behind this near the fourth lateral tooth. Anterior legs very large, the left a little larger than the right. Carpus, propodos and base of dactylos covered with prominent granules. Carapace and limbs covered with a short, close pubescence. Length of carapace $\frac{5}{8}$ths inch; breadth $\frac{7}{8}$ths inch.

Hab. Tasmania.

Pilumnus inermis, *n. s.*

Carapace slightly convex, postero-lateral borders converging; surface smooth behind and in the centre, finely granular on the front and near the antero-lateral margins. Front convex, entire, with a slight mesial groove above. Orbital margins not toothed. Antero-lateral margins with three very obscure notches. Chelipedes with the propodos much larger in the male than in the female, very broad in the former, finely and closely granulous above, nearly smooth externally, but with a few obscure granules and a low longitudinal ridge near the lower margin; the female finely granular above, on the proximal portion of the outer surface and below, and with a longitudinal row of granules on the outer surface close to the lower border, becoming a well-marked entire ridge on the digital portion. Anterior granular portion and anterior border of carapace, granular portion of chelipedes and borders of ambulatory legs clothed with long hairs Length of carapace $\frac{5}{16}$ths inch, breadth $\frac{3}{8}$ths inch.

Hab. Port Jackson.

Pilumnus glaberrimus, *n. s.*

Carapace nearly square, convex, postero-lateral borders nearly parallel; surface smooth, glabrous, with a few scattered punctations, no trace of inter-regional lines. Front nearly straight, almost entire, but with a very minute mesial notch. Antero-lateral margins rather prominent, with four very obscure low lobes. Orbital borders without teeth. Merus-joint of chelipedes smooth, triquetrous, with two acute teeth at its distal end above; carpus smooth internally and externally, finely granulous above, its internal and distal angle slightly produced; propodos much larger in the male than in the female, finely and closely granular above, it outer surface in the female with two regular longitudinal rows of granules, and below, close to the inferior margin, an acute ridge which is continued to near the extremity of the digital portion; in the male smooth, or with a few irregular granules. Borders of the carapace, abdomen and legs lined with fringes of long hairs.

Hab. Port Jackson.

Pilumnus integer, *n. s.*

Carapace deep, very convex antero-posteriorly, regions very indistinctly indicated, postero-lateral borders parallel. Surface finely granular. Front rather prominent, narrow (the breadth of the interorbital space being contained three and a half times in the breadth of the carapace), divided into two rounded lobes by a mesial notch. Antero-lateral borders entire. Chelipedes in the male very large,—the right propodos larger than the left—the latter granular over all the outer surface with the exception of a triangular space near the base of the mobile finger, the former only granular near the base, a granular ridge near the lower border of the propoda of both chelipedes, becoming entire on the digital portion to the apex of which it extends. Margins of carapace and limbs ornamented with fringes of hairs. Colour brick-red. Length of carapace $\frac{5}{16}$ths inch; breadth nearly $\frac{3}{8}$ths inch.

Hab. Port Jackson.

Neither this species nor the preceding can be regarded as typical *Pilumni*, but their connections with *Pilumnus* are so close that I have thought it expedient to set them down provisionally as aberrant members of that genus.

Melia (?) brevipes, *n. s.*

Carapace smooth, broader than long, convex, especially in its anterior half. Front not deflexed, margin entire, slightly arched. Lateral borders slightly arched anteriorly, with an acute tooth directed forwards near the antero-lateral angle. Third joint of the external maxillipedes notched at its antero-internal angle for articulation with the fourth joint. Anterior legs stout; carpus with an acute tooth internally; propodos smooth, with a deep groove close to its lower border, at the distal extremity; upper finger also canaliculated externally. Ambulatory legs rather short, smooth, and with a few hairs above and below. Length $\frac{7}{16}$ths inch; breadth $\frac{1}{2}$ inch.

Griffith's Point, Western Port, about five fathoms.

Painaruppellia, *n. g.* (Fam. Eriphiidæ).

Carapace as in *Ruppellia.* Basal joint of the antennæ extremely short, not nearly reaching the front; second joint stout, touching the front; flagellum entirely excluded from the orbit by the union of the lower orbital border with the front.

Pararuppellia saxicola, *n. s.*

Carapace convex, very minutely granular; front prominent, sex-dentate, the two median teeth more prominent and much broader than the lateral, truncate. Orbital margin finely granular, upper border with two fissures—an obtuse lobe at its inner end; outer angle with two blunt teeth; lower border with a rounded lobe near its inner angle. Antero-lateral margin thin, granular, divided by two wide notches into three low broad lobes, of which the first is the narrowest and the second the broadest; behind this a prominent acute tooth directed forwards and outwards, its anterior border continued on the carapace as a granular ridge for a short distance. Chelipedes extremely large and swollen in the male, carpus minutely granular and punctate, with a few larger granules on its distal border, a strong tooth-like process at its inner and distal angle; propodos unequal, the larger (in the male) longer than the carapace, the breadth about half the length, minutely granular and punctate above, punctate alone below; a row of punctations forming a longitudinal groove on the lower and distal portion of the outer surface of the propodos, continued on the digital portion; dactylos granular above close to its insertion, with a short groove on either side, a rounded lobe at the base of the cutting edge, and four or five low teeth; fingers of smaller chelipede each with a row of subequal rounded teeth. Ambulatory legs hairy on the borders. Length of carapace 2 ⅛th inches; breadth 3 inches.

Hab. Port Essington; collected by Mr. Alex. Morton. This species is much used by the natives for food.

Neptunus tomentosus, *n. s.*

Carapace sligntly convex, finely granular and short-tomentose, shape approaching that of *Amphitrite;* breadth about twice and a half the length. Front quadridentate, the teeth rounded, the median rather more prominent and rather narrower than the outer, separated by a deep fissure. Upper orbital margin with two fissures. Antero-lateral borders with eight acute, forward-curved teeth—the last nearly twice as long as the others. Anterior border of merus-joint of chelipedes with three acute teeth; posterior border unarmed; carpus strongly ridged, with a very long acute spine internally and two short acute spines externally; propodos strongly ridged, with one spine at the base and two above the articulation of the dactylos; fingers of both chelipedes with small, sub-equal teeth.

Hab. Port Jackson.

This species is closely allied to *Lupa pubescens,* Dana, (U. S. Explor. Exped. Crust. i., p. 274, pl. xvi., fig. 9.) but differs from it in having the frontal teeth rounded, the median pair being a little more prominent than the others, in having the last tooth of the lateral margins relatively shorter and in wanting the stout basal tooth on the dactylos.

Eucrate affinis, *n. s.*

Carapace smooth, convex; a faint mesial frontal furrow bifurcated behind so as to bound the anterior portion of the protogastric region; two slight ridge-like elevations near the antero-lateral border, and another running obliquely parallel to the postero-lateral border. Front straight, faintly notched in the middle. Inner orbital angle acute. Antero-lateral borders with four teeth, each of which is carinated. Anterior legs (in the male) dilated; arm with a strong tooth above near its distal end, separated distally by a transverse groove from a second lower transverse elevation; wrist with a small tooth at the distal and internal angle, very hairy externally; hand smooth, with a longitudinal ridge close to the inferior border, and two rounded elevations between the bases of the fingers. Ambulatory legs long and slender, the three terminal joints hairy above and below. Length $\frac{3}{8}$ths inch; breadth $\frac{1}{2}$ inch.

Hab. Off Holborn Island, near Port Denison, 20 fathoms.

This species is a near ally of *E. crenatus*, De Haan, (of which there is a specimen from Japan in the Australian Museum) but is distinguished from it by the presence of the short ridges on the lateral portions of the carapace, by the shape of the lateral teeth, and the acuteness of the internal orbital angle.

Eucrate sexdentatus, *n. s.*

Carapace convex, faintly granular at the sides, without ridges or grooves. Front as in the preceding species. Internal orbital angle not conspicuous. Antero-lateral margin three-toothed, teeth not carinated, the last spinous, separated by a slight interval from the second. Anterior legs nearly as in the preceding species, but the second elevation on the upper border of the arm inconspicuous, and the tooth on the wrist more prominent and acute; ambulatory legs with fewer and shorter hairs. Carapace with about twenty red spots. Length $\frac{3}{8}$ths inch; breadth $\frac{7}{16}$ths.

Hab. Off Holborn Island, Port Denison, 20 fath.

Macrophthalmus latifrons, *n. s.*

Carapace about once and a half as broad as long; surface very finely granulate. Front broad, about one-fourth of the total breadth. Orbits nearly transverse. Lateral borders arched, with three teeth separated by deep fissures, the first two broad, the third small. Anterior limbs in the male very large, finely granular like the carapace; hand unarmed, with a granular raised line on the outer surface near the lower border. Immobile finger much bent downwards, regularly denticulated on its inner edge; inner edge of mobile finger with a denticulated elevation near the base. Inner surface of the arm, edge of carapace, and basal joints of legs, with scattered slender hairs; a thicker coating on the fourth and fifth joints of the ambulatory legs. Length of carapace ¾ths inch; greatest breadth 1⅛th inch.

Hab. Port Philip.

Utica setosipes, *n. s.*

Surface of the carapace and ambulatory limbs covered with a very fine close pubescence. Front not very prominent, straight. Transverse ridge on the protogastric region well marked, divided by a narrow mesial furrow. Lateral borders very little arched anteriorly. Chelipedes (in the female) small; própodos smooth, with a low narrow ridge close to its lower border extending to the tip of the digital prolongation; digits slightly spoon-excavate at the tips. Last two joints of the ambulatory legs fringed below with long hairs. Length of carapace 7/16ths inch; breadth ½ inch. Colour dark brown.

Hab. Port Denison. Found on the sea-shore by Mr. Alex. Morton; the species hitherto described are inhabitants of fresh water.

Utica crassimana, *n. s.*

Upper surface of carapace smooth, naked. Margin of front slightly concave. Lateral borders a little more arched than in the preceding species. Anterior legs very large in the male; hand swollen, smooth; fingers very widely gaping, the gap being covered over by a thick bundle of hairs arising from the bases of the fingers and the extremity of the palm; a narrow ridge on the outer surface of the lower finger not continued on the palm; inner borders of fingers finely toothed, apices slightly spoon-excavate. Ambulatory legs finely tomentose, terminal and penultimate joints fringed below with long hairs. Colour light pink with purple markings. Length ½ inch; breadth ⅝ths inch.

Holborn Island, near Port Denison, on the sea-shore.

A near ally of *U. barbimana*, A. M.-Edw., but differing from it in the relatively broader carapace, the larger hands, the more arched fingers, hairy terminal joints of the ambulatory legs, and other points.

Chasmagnathus convexus, *n. s.*

Carapace strongly convex both in the transverse and the antero-posterior direction; surface very minutely granular, lateral border arched anteriorly, with one tolerably deep incision. Front strongly deflexed, its anterior border with a slight angular mesial incision and a lateral shallow concavity so as to appear very obscurely four-lobed. Anterior legs (in the female) very finely granulate; fingers regularly toothed, a slight space between them at the base. Length ¾ths inch; breadth 1 inch.

Hab. Shoalhaven (Australian Museum.)

Hymenosoma rostratum, *n. s.*

Carapace sub-orbiculate, rather longer than broad. Rostrum produced, acute, slightly recurved; an obscure tooth at its base in front of the eye; a prominent acute tooth behind the eye, and another about the middle of the lateral margin. Three prominent tubercles on the pterygostomial regions. Chelipedes in the male very large, arm trigonal, a sharp tooth at the distal end of its upper border; carpus with three short, much elevated, tooth-like carinæ; propodos broad, compressed, prominently keeled above, obscurely keeled below; fingers each with a basal tooth; immobile finger with a second but lower elevation about the middle. Length $\frac{5}{16}$ths inch; breadth ¼ inch.

Hab. Griffiths' Point, Port Western, Victoria.

SYNONYMY OF AND REMARKS UPON TWO AUSTRALIAN SPECIES OF MELANIA.

BY J. BRAZIER, C.M.Z.S., &c.

1. MELANIA TATEI, Brazier.

Melania tetrica, Conrad (non Gould) Proc. Acad. Nat. Sciences, Phil., p. 11, 1850. American Journal Conch. ii., p. 80, pl. 1, fig. 9, 1866. *Melania Balonnensis,* Brot (non Conrad) in Martini and Chemnitz, Conch. Cab. p. 287, pl. 28, fig. 14 and 14 *b.*, 1874.

Hab. Richmond and Clarence Rivers, New South Wales, Wide Bay, Port Curtis and the upper Brisbane River, Queensland *(Brazier).* Rivers of South-east Australia *(Conrad).*

This species is only found in the rivers and small creeks of New South Wales and Queensland. Mr. Conrad is evidently wrong when he quotes the rivsrs of South-east Australia or his specific names of *M. tetrica* and *Balonnensis* have got transferred.

Dr. A. Brott in his "Materiaux pour servir a l'etude de la famille des Melaniens. Additions et Corrections au Catalogue Systematique des Especes qui composent la Famille des Melaniens 64 pages 3 coloured plates Geneva, 1868," considers *M. tetrica* and *Balonnensis* of Conrad to be only local varieties of one species; but they are quite distinct. The *Melania tetrica,* Gould, 1847, is a synonym of *Melania bellicosa,* Hinds, 1844.

A new name being required for our Australian species I take great pleasure of naming it after Professor Ralph Tate of South Australia.

2. MELANIA BALONNENSIS.

Melania Balonnensis, Conrad, Proc. Acad. Nat. Sciences Phil., p. 11, 1850. American Journal Conch. ii., p. 80, pl. 1, fig. 10, 1866. Brot in Martini and Chemnitz, Conch. Cab. p. 287, pl. 28, fig. 14 *a*. and 15, 1874.

Hab. Lower Murray River, South Australia *(Professor Tate)*.

This species is of a much lighter texture than *M. Tatei*, also lighter coloured, and the ribs not so distinct on the body whorl.

CHECK LIST OF THE FRESH-WATER SHELLS OF AUSTRALIA.

BY RALPH TATE, ASSOC. LINN. SOC., F.G.S., CORR. MEMB. ACAD. SC. PHILAD., ROY. SOC. TASMAN, &c., PROFESSOR OF NATURAL HISTORY, UNIVERSITY OF ADELAIDE; AND JOHN BRAZIER, CORR. MEMB. ZOOL. SOC., ROY. SOC. TASM., &c.

In this communication, we have attempted to bring together the scattered published sources of information concerning the fresh-water molluscs of Australia, in the hope that it may serve as a basis for a monograph on the subject. Excepting the labours of Deshayes and Lea, among the lamellibranchs, no comprehensive survey of the fresh-water shells of this continent has been attempted. It is true that the fresh-water shells of Tasmania have been arranged by Messrs. Woods and Johnston, but, in this case no comparison has been instituted between the insular and continental faunas; and it may safely be alleged that, in general, the knowledge of our fresh-water shells consists of a number of units, which in no sort of way have been brought into relationship one with another. Thus, each geographical region is made to be exceptionally distinct from neighbouring ones. Whether this be actually true ?, or whether it be apparently so, because of the imperfect state of our knowledge ? Are questions which must be determined, before any generalizations can be made.

Our experience in the literature is such as induces us to urge, that a systematic effort be made to revise the whole nomenclature relating to the subject. Australian naturalists are, we think, all agreed that a work of this kind can be efficiently undertaken by ourselves; and as this Society, in its corporate capacity, is more capable of securing co-operation, than an individual is, we would suggest, in the above connection, that it take the initiatory steps.

In the accompanying list, we have refrained from critical remarks of our own; but have tentatively accepted those which have been published by others. Therein, we have endeavoured to arrange the species so as to indicate their alliances; the localities given are those appended to the original diagnoses, excepting in such cases where previously none had been known a locality has since been found. In the *Unionidæ* we have largely availed ourselves of Mr. Etheridge's list of the Recent Australian Species in Rep. Depart. Mines, N.S.W., 1878, p. 165.

We would call attention to the fact that the animals of nearly all the species have not been examined, and in consequence the systematic position of many has merely been guessed at. If the distinctions between *Physa* and *Amplexa*, *Lymnæa* and *Amphipeplea*, *Ancylus* and *Velletia*, &c., are to be maintained, then is there the greater need for this kind of investigation. Personal examination in this direction has elicited the fact that species described as *Physa* and *Amphipeplea* are wrongly referred to those genera. Particularly among the fresh-water *Rissoidæ* does much generic confusion prevail.

The result of the present compilation, so far as numbers are concerned, is as follows:—

Lymnæa	16	
Physa	54	More than half for the whole world.
Physopsis	1	
Ancylus	4	

Gundlachia	1
Planorbis	7
Total Pulmonates	83
Melaniadæ	17
Paludinidæ	10
Valvatridæ	1
Neritidæ	8
Rissoidæ	19
Assunmiadæ	2
Cyrenidæ	26
Unionidæ	21
Total	189

Class PULMONATA (Lininophila).

Family LYMNÆIDÆ.

Genus Lymnæa.

brevicauda, *Sowerby*, in Reeve's Icon., t. 15, f. 105, 1872.—Australia.

globosa, *Sowerby*, in Reeve's Icon. t. 12, f. 84.—Australia.

Melbournensis, *Pfeiffer*, Novitates Conch., p. 70, t. 19, f. 14, 15; *Reeve*, Icon., Conch., t. 6, f. 39.—Melbourne.

Lessoni, *Deshayes*, Magaz. de Conchyl.; *Lesson*, Voy. Coquille, Vol. 2, p. 330.—River Macquarie at Bathurst.

Strangei, *Pfeiffer*, Malakozool Bl. Vol. 1, p. 64, 1844; *id*, Nov. Conch., Vol. 1, p. 6, t, 2, f. 5-7; *Reeve*, Icon. Conch., t. 6, f. 40.—Moreton Bay.

Angasi, *Sowerby*, in Reeve's Icon. Conch., t. 2, f. 11, 1872.—Port Darwin.

perlevis, *Conrad*, American Jour. Conch., Vol. 2, p. 80, t. 1, f. 5, 1850.—Rivers Balonne and Salamanca.

vinosa, *Adams & Angas*, Proc. Zool. Soc., p. 415, 1863; *Reeve*, Icon., t. 6, f. 37.—Adelaide River.

Phillipsi, *Adams & Angas*, P.Z.S., p. 416, 1863; *Reeve*, Icon. t. 6, f. 41.—Arnheim Land.

Deshayesi, *Adams*, P.Z.S., *Reeve*, Icon., t. 14, f. 95, 1872.—Australia.

spirulata, *Mousson*, Journ. de Conchyl.; *Reeve*, Icon. t. 15, f. 106.—Australia.

papyracea, *Tate*, Trans. Roy. Soc., S. Aust., p, 103, t. 4, f. 5, 1880.—Penola (S. A.).

subaquatilis, *Tate*, op. cit., t. 4, f. 6.—Adelaide.

involuta, *Mousson*, Cat. v., Mus. Godeffroy, p. 89, 1874.—Queensland.

acuta, *Mousson*, op. cit., p. 89, 1874.—Queensland.

australiana, *Cox*, Paetel, Cat. der Conch., p. 115, 1873.—Queensland.

Extra limital species of Lymnæa.

Cumingi, Pfeiffer, P.Z.S., p. 68, 1845, of the Philippines is incorrectly stated in Reeve to be Australian.

Hobartonensis, T.-Woods, Roy. Soc. Tasm., p. 71, 1876.—I. peregra (*teste* Johnston).

Launcestonensis, T.-Woods, op. cit., p. 71.—I. peregra (*teste* Johnston).

Huonensis, T.-Woods, op. cit., p. 71.—Launcestonensis (*teste* Petterd).

Tasmanica, T.-Woods, op. cit., p. 70.—Stagnalis (*teste* Petterd).

Genus PHYSA.

latilabiata, *Sowerby*, in Reeve's Icon., t. 5, f. 33, 1873.—R. Victoria.

Newcombi, *Adams & Angas*, P.Z.S., p. 416, 1863; *Reeve*, Icon., t. 3, f. 21.—Mount Margaret (C. Aust.)

ferruginea, *Adams & Angas*, op. cit.; *Reeve*, t. 4, f. 25.—Arnheim Land.

Hainesii, *Tryon*, Am. Journ. Conch., Vol. 2, t. 2, f. 9, p. 9.—Australia.

subinflata, *Sowerby*, in Reeve's Icon., t. 1, f. 6a.—S. Australia.

inflata, *Adams & White*, P.Z.S., p. 39, 1864; *Reeve*, t. 1, f. 4.—S. Australia.

Van Diemenensis, *Sowerby*, in Reeve's Icon., t. 8, f. 57, 1873.—Tasmania.

aperta, *Sowerby*, in Reeve's Icon., t. 11, f. 88, 1874.—Tasmania.

crebreciliata, *T.-Woods*, Trans. Roy. Soc., Victoria, 1877.—Melbourne.

pilosa, *T.-Woods*, op. cit.—Melbourne.

pinguis, *Sowerby*, Reeve, t. 12, f. 93, 1874.—S. Australia.

subundata, *Sowerby*, Reeve t. 8, f. 61, 1873.—"St. Margaret's," S. Aust.

castanea, *Sowerby*, Genera of Shells; *Reeve*, t. 10, f. 86.—Australia.

pectorosa, *Conrad* (1850); *Tryon*, Am. Journ. Conch., Vol. 2., t. 1, f. 6.—R. Bogan (N.S.W.)

vullata, *Sowerby*, Reeve's Icon., t. 12, f. 97, 1874.—S. Australia.

concinna, *Adams & Angas*, P.Z.S., p. 417, 1863; *Reeve*, Icon., t. 5, f. 35.—Arnheim Land.

Georgiana, *Quoy & Gaimard*, Voy. Astrolabe, t. 58, f. 23, 24.—King George's Sound.

dispar, *Sowerby*, in Reeve, t. 8, f. 66, 1873.—New South Wales.

Novæ Hollandiæ, *Blainville*, Malacolo, t. 37, f. 3; *Lesson*, Voy. Coq., t. 26, f. 5, 1830; Reeve, t. 2, f. 10.—R. Macquarie.

puncturata, *Sowerby*, Reeve's Icon., t. 11, f. 91, 1874.—Australia.

duplicata, *Sowerby*, op. cit., t. 12, f. 100, 1874.—Wide Bay, Queensland.

tenuistriata, *Sowerby*, op. cit., t. 10, f. 85, 1873.—R. Torrens (S.A.)

arachnoidea *T.-Woods*, Trans. Roy. Soc. Victoria, 1877.—Near Melbourne.

australiana, *Conrad* (1850); *Tryon* Am. Jour. Conch., Vol. 2, t. 1, f. 7.—R. Bogan.

australis, *Koch*, Cat. V., Mus. Godeffroy, p. 89, 1874.—Bowen, Queensland.

nitida, *Sowerby*, in Reeve's Icon., t. 12, f. 98, 1874.—Tasmania.

Huonensis, *T.-Woods*, Trans. Roy. Soc., Tasmania, p. 74, 1875. —Tasmania.

(Possibly a variety of *nitida*, *teste* Petterd.)

Bruniensis, *Sowerby*, in Reeve's Icon., t. 12, f. 99, 1874.—Tasmania.

Tasmanicola, *T.-Woods*, op. cit., p. 75, 1875.—Tasmania.

Huonicola, *T.-Woods*, op. cit., p. 75, 1875.—Tasmania.

Yarraensis, *T.-Woods*, Trans. Roy. Soc. Victoria, 1877.—Upper Yarra, Vict.

acutispira, *Tryon*, Am. Jour. Conch., Vol. 2, t. 2, f. 10.—Australia.

olivacea, *Adams & Angas*, P.Z.S., p. 416, 1873; *Reeve*, Icon. Conch., t. 5, f. 34.—Arnheim Land.

fusiformis, *Nelson & Taylor*, Journ. Conch., Vol. 2, t. 1, f. 9, p. 289, 1879.—R. Richmond, N.S.W.

proteus, *Sowerby*, in Reeve's Icon., t. 6, f. 43, 1873.—W. Australia.

gibbosa, *Gould*, "Otia," p. 42, 1847; *Reeve*, t. 4, f. 27.—New South Wales.

texturata, *Sowerby*, in Reeve's Icon., t. 12, f. 95, 1874.—S. Australia.

badia, *Adams & Angas*, P.Z.S., p. 416, 1863; *Reeve*, Icon., t. 7, f. 51.—Tributary of Adelaide R.

pyramidata, *Sowerby*, in Reeve's Icon., t. 8, f. 62, 1873.—Australia.

eburnea, *Sowerby*, op. cit., t. 11, f. 87, 1874.—Tasmania.

attenuata, *Sowerby*, op. cit., t. 12, f. 94, 1874.—Tasmania.

mamillata, *Sowerby*, op. cit., t. 11, f. 90, 1874.—Tasmania.

Brisbanica, *Nelson & Taylor*, op. cit., t. 1., f. 7, p. 288.—Brisbane R.

Beddomei, *Nelson & Taylor*, op. cit., t. 1, f. 8, p. 289.—Townsville, Queensland.

aciculata, *Sowerby*, in Reeve's Icon., t. 8, f. 59, 1873.—New South Wales.

turriculata, *Tate*, Proc. Linn. Soc., N.S.W., Vol. 6 p. 409.—Ballarat.

Aliciæ, *Reeve*, P.Z.S., 1862; Icon., t. 1, f. 6b.—R. Para & R. Murray (S. Aust.)

Kershawi, *T.-Woods*, Roy. Soc. Victoria, 1877.—Upper Yarra, Vict.

Bonus-Henricus, *Adams & Angas*, P.Z.S., p. 417, 1863; *Reeve*, Icon., t. 5, f. 38.—Arnheim Land.

carinata, *H. Adams*, P.Z.S., p. 143, 1861; *Reeve*, t. 3, f. 18.—Boyne R.

obesa, *H. Adams*, op. cit., p. 144; *Reeve*, t. 3, f. 24.—R. Fitzroy.

Cumingi, *H. Adams*, op. cit., p. 144; *Reeve*, t. 6, f. 44.—Port Essington.

truncata, *H. Adams*, op. cit., p. 144; *Reeve*, t. 3, f. 20.—R. Burdekin.

Reevei, *Adams & Angas*, P.Z.S., p. 417, 1863; *Reeve*, t. 6, f. 40.—Arnheim Land.

Extra-limital, doubtful, and spurious species of Physa.

auriculata, Gassies, is from New Caledonia and not Australian as quoted by Sowerby in Reeve's Icon. Conch.

Kanakina, Gassies, is also a New Caledonian shell and not Australian as stated by Sowerby in Reeve's Conch.

elongata, Menke, Malac. Nov. Holl., p. 8, name only.—W. Australia.

Legrandi, T.-Woods, Roy. Soc. Tasm., p. 74, 1876; and

Tasmanica, T.-Woods, id., *vide* nitida (*teste* Johnston).

ciliata, T.-Woods, op. cit., p. 75, *vide* mamillata (*teste* Johnston).

Genus PHYSOPSIS.

Jukesii, *A. Adams*, P.Z.S., p. 144, 1861; *Reeve* (Physa), t. 9, f. 71.—Australia.

Genus ANCYLUS.

Cumingianus, *Bourguignat*, Proc. Zool. Soc., 1853, t. 20, f. 1-9; *Reeve*, Icon., t. 1., f. 1.—Tasmania.

Tasmanicus, *T.-Woods*, Trans. R. S. Tasm., 1876, p. 70.—Tasmania.

Woodsii, *Johnston*, id., 1877.—Tasmania.

Australicus, *Tate*, Trans. R. S. S. Aust., 1880, p. 102, t. 4, f. 4.—Adelaide, S.A.

[*Baconi*, Bourguignat, P.Z.S., p. 89, 1853. Reeve, t. 2, f. 8, is suspected by Benson to be Australian and not Bengalese.]

Genus GUNDLACHIA.

Petterdi, *Johnston*, Trans. R. Soc. Tasm., 1878, Tasmania.

Genus PLANORBIS.

Gilberti, *Dunker*, Proc. Zool. Soc., p. 40, 1848; *Reeve*, t. 5, f. 37.—E. Australia.

obtusus. *Reeve*, Icon. Conch., t. 5, f. 39.—Adelaide.

Australianus, *Martens*, Paetel, Cat. der Conch., p. 116, 1873.—Tasmania.

meridionalis, *Brazier*, Proc. Lin. Soc., N.S.W., p. 20, 1875.—Tasmania.

Atkinsoni, *Johnston*, Roy. Soc. Tasmania, 1878.—Tasmania.

Scottiana, *Johnston*, op. cit.—Tasmania.

planissimus, *Mousson*, Cat. V., Mus. Godeffroy, p. 88, 1874.—Queensland.

Spurious species of Planorbis.

Tasmanicus, T.-Woods, Roy. Soc. Tasmania, p. 79, 1876. *meridionalis* (*teste* Johnston).

Class GASTROPODA (Pectinibranchiata).

Family MELANIADÆ.

Genus MELANIA.

Cybele, *Gould*, Proc. Bost. Soc. Nat. Hist., 1847; Exped. Shells, f. 154.—Cardwell, Queensland.

aculeus, *Lea*, Trans. Am. Phil. Soc., Phil. V., t. 19, f. 72, 1833. —Paroo R., Australia, and Philippines.

Denisoniensis, *Brot*, in Martini and Chemnitz, Conch. Cabinet, p. 234, pl. 25, fig. 6, 6 *a*. *b*., 1874.—Port Denison, Queensland.

lutosa, *Gould*, Proc. Boston Soc. Nat. Hist., 1847; *id* Fitzroy Island; Exped. Shells, f. 159, 1852.—Cardwell, Queensland.

carbonata, *Reeve*, Conch. Icon. fig. 88, 1859; *Brot*. in Martini and Chemnitz, Conch. Cabinet, p. 153, p. 19, fig. 3, 1874.—Port Essington (British Museum).

venustula, *Brot*. in Martini and Chemnitz, Conch. Cabinet p. 331, pl. 34, fig. 5, 5*a*, 1874.—Cape Upstart.

canalis, *Lea*, Proc. Zool. Soc., p. 180, 1850.—Belenden-Ker Range.

costellaris, *Lea*, id, p. 184.—Rockhampton.

juncea, *Lea*, id, p. 189.—Burdekin River.

Balonnensis, *Conrad*, (1850); Am. Journ. Conch., Vol. 2. t. 1, f. 10, p. 80, 1866.—River Murray, South Australia.

Tatei, *Brazier*, Proc. Linn. Soc. N.S.W., Vol. 6, p. 551.—Port Curtis and Clarence River.

cerea, *Brot*., Revue Zool., t. 17, f. 13, 1860.—Australia.

incerta, *Brot*., Mater I., p. 52, 1862.—R. Avon, W. Australia.

australis, *Lea*, Proc. Zool. Soc., p. 185, 1850; *Reeve*, Icon. Con., t. 12, f. 82; *Smith*, Voy. Erebus, t. 4, f. 3, 1874.—River Victoria.

onca, *Adams & Angas*, P.Z.S., 1863.—Tributary of Adelaide R.

oncoides, T.-Woods, P.L.S., N.S.W., p. 6, 1878.—R. Darling near Bourke.

Spurious species of Melania.

lirata, Menke, Moll. Nov. Holl., p. 9, 1843=*incerta*. The name is preoccupied by a species described by Benson.

tetrica, Conrad, (1850); and Ann. Journ. Conch., Vol. 3, t. 1, f. 9, p. 80, (1866)=*Tatei*, Brazier. Dr. Gould described a Figian species under that name in 1847, Proc. Boston Soc. Nat. Hist.

mitra, Reeve, Conch. Icon. fig. 175. non Deshayes or Meuschen vide *Cybele* not *M. Australis*, Reeve, not *M. Australis*, Lea, Proc. Acad. Nat. Sci. Philad.

Family PALUDINIDÆ.

Genus PALUDINA.

Essingtonensis, *Shuttleworth; Frauenfeld*, Zool. and B. Gess., Wien, 1862, p. 1162.—Port Essington, (N. Aust.)

australis, *Reeve*, Icon. Con., t. 11, f. 71, 1863 "probably the foregoing" Iryon.—Victoria R. (N. Aust.)

suprafasciata, *Tryon*, Am. Jour. Conch., Vol. 2., p. 8, t. 2, f. 7, 1866.—Tropical Australia.

Kingii, *Adams & Angas*, P.Z.S., 1863.—King's Ponds (C.A.)

Hanleyi, *Frauenfeld*, op. cit., p. 612.—Lower Murray River.

Waterhousei, *Adams & Angas*, P.Z.S., 1863.—Newcastle Waters (C.A.)

sublineata, *Conrad*, Proc. Acad. Sc. Philadelphia, 1850; *id*, Am. Journ. Con., Vol. 2, t. 1, f. 8, p. 79, 1866.—River Darling.

polita, *Martens*, Ann. Mag. Nat. Hist., 1865 (non Frauenfeld 1862) "probably is *sublineata*," Tryon.—Australia.

affinis, *Martens*, op. cit.—Australia.

Alisoni, *Brazier*, Proc. Linn. Sc., N.S.W., Vol. 3, p. 221, 1878.—Diamantina River, Queensland.

Spurious species of Paludina.

acuta, Menke, (? non Ferrusac) name only.

buccinoides, Quoy & Gaimard, vide *Hydrobia buccinoides*.

granum, Menke, vide *Assiminea granum.*
intermedia, Reeve, Icon. t. 9, f. 57, 1863 (non Deshayes)=*Hanleyi*.

Family VALVATIDÆ.

Genus VALVATA.

Tasmanica, T.-Woods, Proc. Roy. Soc. Tasm., p. 82, 1876.—Tasmania.

Family NERITIDÆ.

Genus NAVICELLA.

Entrecastauxi, Recluz, Rev. Zool. Soc. Cuvierienne, p. 380, 1841; *Reeve*, Icon., t. 8, f. 32.—King George's Sound.

Genus NERITINA.

pulligera, *Lamarck*, Anim. s. Vert VI. 2ed p. 184; *Sowerby*, Conch. Illus. f. 26.—Moluccas.
var. sulcata, *T.-Woods*, P. Lin. Soc., N.S.W., 1878.—North Queensland.
auriculata, *Lamarck*, op. cit., p. 186; *Sowerby*, Con. Illus, f. 17. New Holland.
crepidularia, *Lamarck*, op. cit., p. 186; *Reeve*, Icon. t. 8, f. 38; *Sowerby*, Thes. Conch. t. 113, f. 139-143.—Rockingham Bay.
Mertoniana, *Reclus*, P.Z.S., p. 71, 1843; *Sowerby*, Thes. Conch. p. 534, t. 116, f. 242-245.—Cape Sidmouth.
Tritonensis, *Le Gillou*, Rev. Zool. Soc., Cuvier., p. 345, 1841.—North Australia.
Baconi, *Reeve*, Icon. Conch., t. 28, f. 127.—Swan River.
Dringii, *Reclus.*, P.Z.S., p. 121, 1845; *Reeve*, t. 29, f. 132.—Hanover Bay, W. Australia.

Family RISSOIDÆ.

Genus BITHYNIA.

australis, *Tryon*, Am. J. Conch. I., p. 220, t. 22, f. 7, 1865.—New South Wales.

vertiginosa, *Frauenfeld*, Zool. Bot. Gess-Wien, 1865, p. 1152, t. 9.—New Holland.

Schraderi, *Frauenfeld*, op. cit., t. 8.—Australia ?

Dulvertonensis, *T.-Woods*, Roy. Soc., Tasmania, p. 77, 1876. —Tasmania.

Dunrobinensis, *T.-Woods*, id.—Tasmania.

Victoriæ, *T.-Woods*, Roy. Soc. Victoria, 1877.—Geelong, Vict.

Dyeriana, *Petterd*, Journ. Conch. II., p. 86, 1879.—Tasmania.

Spurious species of Bithynia.

Huonensis, T.-Woods.

hyalina, Brazier, P. Lin. Soc., N.S.W., I., p. 9, 1875=*Gabbia australis*.

Legrandi, *Tasmanica*, and *unicarinata*, T.-Woods, Roy. Soc. Tasm. 1876=*Bithyinella nigra*.

Pontivillensis, T.-Woods, op. cit., p. 76=*Amnicola Simsoniana*, (*teste* Petterd).

Genus AMNICOLA.

Tasmaniæ, *T.-Woods*, Roy. Soc. Tasm., p. 117, 1876.—Tasmania.

Diemense, *Frauenfeld*, Z. and B. Gess-Wien, Vol. 15, t. 10, 1865. —Tasmania.

Launcestonensis, *Johnston*, Roy. Soc. Tasm., 1878.—Tasmania.

Simsoniana, *Brazier*, Proc. Lin. Soc., N.S.W., I., p. 19, 1875. —Tasmania.

Doubtful and spurious species of Amnicola.

Petterdiana, Brazier, P.L.S., N.S.W., I., p. 19, 1875=*Bithyinella nigra* (*teste* Woods).

Preissii, Gould, ? "Otia" p. 52.

acuta, Frauenfeld, apud Menke, name only.

granum, Frauenfeld, apud Menke, vide *Assiminea granum*.

Genus BITHYINELLA.

nigra, *Quoy & Gaimard*, (Paludina), Voy. Astrolabe, III., p. 174, t. 58, f. 9-12; *T.-Woods*, Proc. R. Soc., Tasm., p. 71, 1880. —Tasmania.

nitida, *Johnston*, P. Roy. Soc., Tasm., 1878.—Tasmania.

Spurious species of Bithyinella.

Legrandiana, Johnston and Woods, (apud Brazier) vide B. nigra.

Genus HYDROBIA.

buccinoides, *Quoy & Gaimard*, (Paludina) op. cit., t. 58; *Frauenfeld*, Z. and B., Gess-Wein, p. 582, 1865.—Port Western, Vict.

Gunnii, *Frauenfeld*, op. cit., vol. 13, p. 1025, 1864; id. p. 526, t. 8, 1865.—Tasmania.

Spurious species of Hydrobia.

nigra, Frauenfeld, vide *Bithyinella nigra.*

Genus PALUDINELLA.

Gilesii, *Angas*, Proc. Zool. Soc., p. 169, t. 26, f. 2, 1877.—Lake Eyre (C. A.)

Genus PALUDESTRINA.

Spurious species.

Legrandiana, Brazier, P.Z.S., p. 698, 1871.

Wisemaniana, Brazier, id., f p. 699=*Bithyinella nigra*, (*teste* T.-Woods).

Genus TATEA.

Huonensis, *T.-Woods*, Roy. Soc. Tasm. p. 77, 1876.—Tasmania.

Spurious species of Gabbia.

Australis, Tryon, vide *Bithynia Australis.*

Genus POMATIOPSIS.

striatula, *Menke*, (Truncatella), Moll. Nov. Holl., p. 9, 1348.—W. Australia.

pyrrhostoma, *Cox*, (Blanfordia), Mon. Aust. Land Shells, p. 95, t. 15, f. 14, 1868.—Sharks' Bay.

Family ASSIMINIDÆ.

Genus ASSIMINEA.

granum, *Menke*, (Paludina), Moll. Nov. Holl., p. 8., 1843.—Swan River.

affinis, *Mousson*, Cat. V., Mus. Godeffroy, p. 103, 1874.—Rockhampton.

Spurious species.

Tasmanica, T.-Woods, and *Rissoa Siennæ*, id., Proc. Roy. Soc., Tasm., p. 78, 1876=*granum*.—Tasmania.

Class LAMELLIBRANCHIATA.

Family CYCLADIDÆ.

Genus SPHÆRIUM.

egregrium, *Gould*, "Otia," p. 86, 1850.—River Hunter.

Novo-Zelandicum, *Deshayes*, Proc. Zool. Soc., p. 342, 1854; *Reeve* Conch. Icon. f. 37.—Australia and New Zealand.

Tasmanicum, *T.-Woods*, Proc. Roy. Soc., Tas., p. 82, 1876.—Tasmania.

Spurious species of Sphærium.

Cyclas australis, *var.* Lamarck, from King George's Sound is probably *Lasæa rubra*, Montague.

Cyclas Nepeanensis vide *Corbicula Nepeanensis.*

Genus PISIDIUM.

semen, *Menke*, Moll. Nov. Holl., p. 40, 1843.—Swan River.

Tasmanicum, *T.-Woods*, Proc. Roy. Soc. Tasm., p. 81, 1876.—Tasmania.

Dulvertonensis, *T.-Woods*, op. cit., p. 82.—Tasmania.

Spurious species of Pisidium.

australe, Deshayes, vide *Cyclas australis*.

australe, Philippi, is *P. casertanum*.

sinuatum, Bourgingnat, J. de Conchyl., III., p. 39, 1852, is not Australian but a European species *P. casertanum*, Poli.

Genus CORBICULA.

australis, *Wood*, Ind. Test. Suppl. 2, t. 14, f. 57; *Deshayes*, Proc. Zool. Soc., 1854, p. 346.—New Holland and Timor.

Nepeanensis, *Lesson*, (Cyclas), Voy. Coq., Vol. 2., p. 428, t. 13, f. 14, 1830.—River Nepean.

debilis, *Gould*, "Otia," p. 86, 1850.—Hunter River.

ovalina, *Deshayes*, Proc. Zool. Soc., 1824.—Port Essington.

brunnea, *Prime*, Proc. Acad. Sc., Philad., p. 126, 1861.—Tasmania.

minor, *Prime*, op. cit., p. 127.—New Holland.

Angasi, *Prime*, Journ. de Conchyl. XII., p. 151, t. 7, f. 6, 1864.—R. Murray (S.A.)

baronalis, *Prime*, Ann. Lyc. Nat. Hist. N.Y., IX, 1869.—Moreton Bay.

prolongata, *Prime*, J. de Conchyl., IX., p. 356, 1861.—Eastern Australia.

Spurious species of Corbicula.

semisulcata, Deshayes, was incorrectly assigned to the Victoria River, it belongs to South America.

Genus BATISSA.

triquetra, *Deshayes*, Proc. Zool. Soc., 1854.—Australia and Philippines.

[*Corbicula australis* is referred to Batissa in Prime's Cat. of the family.]

Genus CYRENA.

fallax, *Deshayes*, Proc. Zool. Soc., p. 19, 1854.—Australia and Philippines.

placida, *Deshayes*, id.—Port Curtis.

affinis, *Deshayes*, id.—Australia.

ventricosa, *Deshayes*, id.—Australia and Philippines.

Essingtonensis *Deshayes*, id.—Port Essington.

Jukesii, *Deshayes*, id.—Cape Upstart.

oviformis, *Deshayes*, id.—Port Essington and Philippines.

eximia, *Dunker*, Zeit. Malak., p. 51, 1852.—Australia and Java.

cyprinæformis, *Prime*, Ann. Lyc. Nat. Hist., N.Y., VIII., p. 88, f. 37, 1864.—Australia.

rugulosa, *Mousson*, Paetel, Cat. der Conch, p. 140, 1873.—Cape York.

Spurious species of Cyrena.

impressa, Deshayes, P.Z.S., p. 18, 1854=*eximia*.

Family UNIONIDÆ.

Genus MYCETOPUS.

rugatus, *Sowerby*, Reeve, Conch. Icon. t. 17, f. 7; *Smith*.—Victoria River, Voy. "Erebus and Terror," t 4, f. 1, 1874.

Genus UNIO.

depressus *Lamarck*, An. s. Vert., VII., p. 79; *Lesson*, Voy. Coq., t. 15, f. 5.—R. Nepean.

Danellii, *Villa*, J. de Conchyl., XIX., p. 328, 1871.—R. Yarra, Victoria.

australis, *Lamarck*, id., p. 80.—New Holland; *Menke*, Moll. Nov. Holland.—R. Avon (W. Aust.)

profugus, *Gould*, "Otia," p: 88, 1850; ed., U.S. Explor. Exp., t. 37, f. 5, p. 42, 1852.—Hunter R. (N.S.W.)

cultelliformis *Conrad*, Acad. Sc. Philad. Proc., V., p. 10, and Journ. 2nd Ser., II., p. 295, t. 26, f. 2.—R. Bogan (N.S.W.)

Balonnensis, *Conrad*, id.; Journ. id., p. 295, t. 26, f. 3.—R. Balonne (Queensland).

cucumoides, *Lea*, Obs. on Unio, iii., p. 30, t. 7, f. 2 —Hunter and Richmond Rivers (N.S.W.); *Moretonicus*, Smith, Voy. "Erebus," t. 4, f. 2.—R. Membridge (Queensland).

Moretonicus, *Sowerby; Reeve*, Icon., t. 24, f. 118.—Tasmania.

Paramattensis, *Lea*, Proc. Acad. Sc. Philad., 1862; Obs. XI., p. 64, t. 20, f. 59.—Parramatta R. (N.S.W.)

Wilsoni, *Lea*, Obs. VII., pt. 2, p. 74, t. 40, f. 137; *Reeve*, t. 88, f. 472.—New South Wales.

Jeffreysianus, *Lea*, Proc. Acad. Sc. Phil., Vol. 23, p. 188, 1871.—Australia.

vittatus, *Lea*, Obs. Unio, VII., pt. 2, p. 67, t. 39, f. 128; *Reeve*, t. 18, f. 83.—Australia.

Nepeanensis, *Conrad*, Journ. Acad. Sc. Philad., p. 296, t. 28, f. 19; *Reeve*, t. 32, f. 167.—Australia, River Bogan, (N.S.W.) (*teste* T.-Woods).

Shuttleworthi, *Lea*, Obs. VI., pt. 1, p. 24, t. 28, f. 19; *Reeve*, t. 32, f. 167.—R. Bogan (*teste* Woods).

mutabilis, *Lea*, Obs. VII., p. 66, t. 38, f. 167; *Reeve*, t. 24, f. 112.—R. Murray, Brisbane Water.

multidentatus, *Philippi*, Conchylien III., pt. 2, t. 3, f. 4, p. 46, 1847.—New Holland.

Novæ Hollandiæ, *Gray*, Proc. Zool. Soc., 1834, p. 57.—River Macquarie (N.S.W.)

Angasi, *Sowerby*, in Reeve's Icon., t. 55, f. 282, 1867.—R. Roper (W. Aust.)

Section ALASMODON.

Stuartii, *Adams & Angas*, P. Zool. Soc., 1863, p. 417; *Reeve*, Icon., t. 54, f. 279, 1866.—Mount Margaret (C.A.)

Evansii, *Adams & Angas*, P. Z. S., 1864, p. 39; *Reeve*, t. 56, f. 285, 1867.—River Murray (S.A.)

Doubtful and extra limital species of Unio.

ambiguus, Philippi; Reeve. *Vide australis.*

Cumingi, Dunker. *Vide cucumoides.*

Moretonicus. Smith, Voy. "Erebus and Terror," t. 4, f. 2, 1874. *Vide cucumoides.*

fulmineus, Philippi, Conchylien, III., pt. 2, 1847, p. 46, t. 3, f. 5, 6. Not certainly Australian.

superbus, Lea (Hyridella), Obs. IV., p. 39, t. 22, f. 11; Reeve, Icon., t. 59, f. 295, 1868. Doubtfully Australian.

Aucklandicus Gray. Very doubtfully Australian.

Genus ANODON.

Spurious species.

Angasi, Sowerby, in Reeve's Conch., t. 32, f. 127, 1870=*Unio Angasi*.

Stuartii, Sowerby, id., t. 34, f. 136, 1870=*Alasmodon Stuartii*.

THE PLANTS OF NEW SOUTH WALES—No. I.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

The publication of the *Flora Australiensis* through the joint labours of Mr. G. Bentham, C.M.G., F.R.S., and Baron F. von Mueller, K.C.M.G., has formed, as it were, an era in the Botany of New South Wales. Though the subject is by no means exhausted, that great work will be regarded as the basis of all future treatises on the Flora of Australia; and as the grand outline is being gradually filled up with descriptions of new plants from different parts of the Continent, it will be seen that the general arrangement of the volumes, as well as the classification of orders, genera, and species, reflects the greatest credit on the distinguished authors. Much, however, remains to be done. Since the appearance of the first volume in 1863 some five or six hundred new species of Australian plants have been discovered, and these, together with the enumeration of the Cryptogamous orders recently elaborated in the *Fragmenta Phytographiæ Australiæ* by Baron Mueller, must in the course of time appear in supplementary volumes to the *Flora Australiensis.* From the sources, however, now before the public, some estimate can be formed of the species indigenous in the Colony, and of the range to which they are limited. With regard to the latter, careful observation is still required in all parts of Australia, for plants, which, a few years since, were supposed to belong to the adjacent colonies are now found to be common to N. S. Wales. Thus, for instance, in the first volume of the *Flora*, including the *Thalamifloræ* and *Discifloræ*, the following species are not recorded as occurring in this colony; and no doubt, as in the formation of local *Floras* the plants of each district are carefully registered, the number of omissions will be proved to be greater than is now supposed. The species, to which I now refer are,

Myosurus minimus, (Linn.)
Brasenia peltata, (Pursh.)
Apophyllum anomalum, (F.v.M.)
Comesperma polygaloides, (F.v.M.)
Cakile maritima, (Scop.)
Stellaria multiflora, (Hook.)
Hibiscus divaricatus, (Grah.)
Elæocarpus holopetalus, (F.v.M.)
Elatine americana, (Arn.)
Corræa alba, (Andr.)

In attempting, therefore, to give a census of the plants of N. S. Wales, or of instituting any comparison between the genera and species of this and the adjacent colonies, the work can only be provisional, for in the progress of science great changes may be anticipated from observing the limits of species, and from the probable amalgamation of forms now recorded as as distinct. It may be well to remark, that so far as yet known, the following orders do not extend to N. S. Wales:—

Guttifera.
Malpighiaceæ.
Burseraceæ.
Ilicineæ.

The first of these orders is represented in Australia by one species, *Calophyllum inophyllum* (Linn.), which, according to the

Flora, is limited chiefly to the Percy Islands. From the *Fragmenta* (Vol. 9, 175), we learn that it extends to Adam's Bay, Cape York, Rockingham Bay, Edgecombe Bay, and Fitzroy's Islands; whilst the Baron, in the same account, introduces another species from Rockingham Bay, viz., *C. tomentosum*. The Malpighiaceæ are confined to solitary species of *Ryssopterys* and *Tristellateia* from Northern Queensland; the Burseraceæ, to one species of *Garuga* from N. Australia, and one of *Canarium* from N. Australia and Queensland, to which Baron Mueller has added *Ganophyllum falcatum* from Port Denison, Rockingham Bay, and Torres Straits; and the Ilicineæ to *Byronia Arnhemensis* (F. v. M.), to which the same author has supplemented *Ilex peduncularis* (F. v. M.), from the woods near Rockingham Bay.

Excluding these four orders from the *Flora* of N. S. Wales, it appears that, in this colony, the orders, genera, and species (that is so far as yet determined) may be arranged as follows:—

Series I. THALAMIFLORÆ.

Orders.	Genera.	Species.
22	68	167

Series II. DISCIFLORÆ.

	Orders.	Genera.	Species.
	13	60	174
Total	35	128	341

The plants which have become naturalized may be referred to 8 orders, including 25 genera, and 29 species, viz.

1. *Ranunculus muricatus*, (L.)
2. *Argemone mexicana*, (L.)
3. *Fumaria officinalis*, (L.)
4. *Lepidium sativum*, (L.)

5. *L. ruderale*, (L.)
6. *Raphanus raphanistrum*, (L.)
7. *Sinapis arvensis*, (L.)
8. *Brassica campestris*, (L.)
9. *Sisymbrium officinale*, (Scop.)
10. *Senebiera didyma*, (Pers.)
11. *Capsella bursa-pastoris*, (Mænch).
12. *Camelina dentata*, (Pers.)
13. *Gypsophila tubulosa*, (Baiss.)
14. *Silene gallica*, (L.)
15. *Cerastium vulgatum*, (L.)
16. *Stellaria media*, (L.)
17. *Spergula arvensis*, (L.)
18. *Dianthus prolifer*, (L.)
19. *Polycarpon tetraphyllum*, (L.)
20. *Portulaca oleracea*, (L.)
21. *Sida rhombifolia*, (L.)
22. *Malva rotundifolia*, (L.)
23. *M. parviflora*, (L.)
24. *M. sylvestris*, (L.)
25. *Cristaria coccinea*, (Pursh.)
26. *Linum gallicum*, (L.)
27. *Erodium moschatum*, (Willd.)
28. *Oxalis cernua*, (Thunb.)
29. *Pelargonium graveolens*, (Ait.)

From the 341 species of dicotyledonous plants in N. S. Wales some idea may be formed of the intermediate character which marks its Flora; for whilst it has many species which are common to Queensland and Victoria, the former has a greater affinity for that of India and China, and the latter a greater affinity for that of Tasmania than the Flora of this colony has. From the following list, it appears that the Cruciferæ are much more numerous in Victoria than in Queensland, whilst in the Malvaceæ, Capparideæ, and Nymphæaceæ, the reverse is the case.

Rutaceæ.

	Gen.	Spec.
Queensland	19	36
New South Wales	17	65
Victoria	6	35

Malvaceæ.

Queensland	8	36
New South Wales	9	28
Victoria	5	8

Cruciferæ.

Queensland	2	3
New South Wales	12	28
Victoria	14	32

Capparideæ.

Queensland	3	13
New South Wales	3	6
Victoria	1	1

Nymphæaceæ.

Queensland	3	4
New South Wales	2	2
Victoria	1	1

With regard to the distribution of the Rutaceæ, it is difficult to account for the large number of the species in New South Wales, unless it may be inferred that the geological formation is more favourable for their development. The distribution of the Tremandreæ (which Mr. Bentham says is an order strictly confined to Australia) is very remarkable, 1 species being found in Queensland, 4 in New South Wales, 5 in Victoria, 14 in Western Australia, 1 in South Australia, and 3 in Tasmania.

In reference to plants which have been introduced, some difference of opinion prevails. Some years since, a paper of mine on the subject was read before the Linnean Society in London, in which I made a calculation, that more than a hundred such plants might be found within fifty miles of Parramatta. That number, I believe, is not over-estimated. Of the Dicotyledoneæ not indigenous in New South Wales, there are probably about 30, but as the other volumes of the *Flora Australiensis* come under consideration, I think that the number will be augmented to 150. In order, however, to form an accurate list of the introduced and indigenous species, and to compare them with the Floras of the Australian colonies or the Flora of Australia generally, considerable attention must be paid to the collection of plants in particular districts and the compilation of local herbaria. During the last year or so, a great step has been taken in this direction in most of the Australian Colonies, and Baron Mueller, to whom this movement may be mainly attributed, has commenced a full and accurate description of all plants indigenous in Victoria. When this valuable work has been completed, it will afford a basis for works of a similar character in other parts of Australia, and then, there will be little difficulty in instituting those comparisons to which I have alluded. With regard to the geographical distribution of Australian plants in general, Mr. Bentham has fully indorsed the views of Sir J. D. Hooker, as laid down in his admirable essay prefixed to his Flora Tasmaniæ. And thus the former concludes, that, whilst the predominant portion appears to be indigenous and never spread far out of it, there is evidence to show that, in remote antiquity, the principal Flora had a connection with Eastern Asia on the one hand, and, from the mountains of Victoria and Tasmania through New Zealand to the Southern end of the American Continent and thence up the Andes, on the other.

DESCRIPTION OF A NEW SPECIES OF HEMEROCŒTES FROM PORT JACKSON.

BY E. P. RAMSAY, F.L.S., &c., CURATOR OF THE AUSTRALIAN MUSEUM SYDNEY.

Fam. TRICHONOTIDÆ.

HEMEROCŒTES HASWELLI, *sp. nov.*

D. 14. A. 27-28. Pect. 13-14. V. $\frac{1}{5}$. C. 16. Lat. 44. Vert. $\frac{1}{5}$-$\frac{1}{5}$.

Caudal truncate, the central ten rays branched, outer three on either side simple, decreasing in size; the dorsal commences nearly opposite the seventh anal ray; rays simple; mouth, very wide, opens to opposite the anterior margins of the eye; minute teeth on both jaws, no canines; scales large, in five to six rows on the body, lateral line on forty-four scales; in central portion of body the scales along the lateral line are toothed from about three scales before the anal papilla. Diameter of the eye about six times in the length of the head to end of gill-cover; gill-cover extending over base of pectoral fin, 26-28 scales between the head above and the first dorsal ray; length of head (5) five times in the total length without caudal fin, the height of body twice in the head and nearly ten times in the total length, without caudal fin; eyes large, almost confluent. There are no teeth visible on the vomer and the scales are very large for the size of the fish. Colour light brown, semitransparent when alive; the tongue long narrow, stiliform (spirit specimen) slightly expanded at the tip; length of specimen 2·4 in.

I have placed this fish provisionally in the genus *Hemerocœtes* to which it comes nearest, it is not however identical with that genus. Four specimens were dredged in April last, under North Head of Port Jackson in sixteen fathoms, sandy bottom.

I have dedicated this species to my esteemed friend W. A. Haswell, M.A., B.Sc.

NOTE ON ORIOLUS AFFINIS, GOULD.

BY. E. P. RAMSAY, F.L.S.

Mr. R. B. Sharpe,‡ (and probably other ornithologists as well), seems to doubt the existence of a third *Oriole* in Australia—*O. affinis*, Gould. I can only assure Ornithologists that in my opinion this is a good species, and fairly described by Mr. Gould and that it has nothing whatever to do with the young of *O. flavicinctus*, as supposed by Mr. Sharpe. This bird is smaller than *O. viridis*, the bill larger, the wings shorter, the tarsi smaller, the breast duller, less olive-green on the chest, the striæ continued on to the flanks and abdomen, no striæ on the throat, which is greyish washed with olive-green; more grey on the primaries, the secondaries and coverts with a narrower white margin; and a small spot white only,on the inner webs of the tail feathers at the tip. Total length from the tip of bill to tip of tail in the flesh 9·4 in., wing 5·5, tail 3·9, tarsus 0·7 in., bill from forehead 1·2, from gape 1·3.

Hab. Gulf district, N. W. Queensland, and Dawson River district, &c.

The eggs of this species are similar to those of its ally *O. viridis*, but smaller and not so rich in colour, they are of a very light creamy buff with dark olive-brown spots, and a few of a pale lilac or slaty tint, appearing as if beneath the shell; the spots are sprinkled all over the surface rather widely apart.

Length A. 1·3 x 0·9; length B. 1·22 x 0·88.

A SOLUTION FOR PRESERVING LARGE VERTEBRATA FOR ANATOMICAL EXAMINATION.

BY N. DE MIKLOUHO-MACLAY.

Ten days ago I found in a German Newspaper a Report of a meeting of the Anthropological Society of Berlin, held on the

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‡ Cat. Bds., Vol. III., p. 188.

19th of March, 1881, in which was stated, that Prof. R. Virchow informed the members present at the meeting that the specimen of the *Homo australis* "Umbelah," (alias Johny Campbell), sent by me from Brisbane in October last year in a conservative fluid, has safely arrived in Berlin and in *good* condition. This will give Prof. Virchow, or his pupils, the opportunity to make valuable anatomical dissections of this interesting specimen of the Genus Homo.

This happy result, which I hardly had dared to expect, induces me to give here the proportions of different ingredients of this solution, which is different from that of Mr. Wickersheim of Berlin. The elements of the Wickerheimer Fluid are:

Alum	100	Kilo.	Arsenious Acid	10	Kilo.
Com. Salt	25		Boiling Water	3000	
Saltpetre	12		Glycerine	1	litre.
Carbonate of Potash	60		Methyl. Alcohol	1	

I have used for my preservative fluid:

4℔ White Arsenic
2℔ Carbon. of Potash
3℔ Corrosive sublimate.
40℔ Com. Salt

Disolved in 40 gallons of water.

Speaking of this new solution, I must mention with thanks, that Mr. R. H. Staiger, the late Gov. Anal. Chem., has assisted me with his theoretical and practical experience. I had also some advice from Mr. A. C. Gregory, C.M.G.

I have to add: that before I put the body in this solution I had, cutting the covering of the abdomen in the Linea alba, removed the tractus intestinalis from the cardia to the rectum, leaving heart, lungs, liver, kidney, etc., etc. "in situ." I injected also about 40 ℔ of the Wickersheimer Fluid in the Aorta descendens, partly as a preservative, but chiefly in order that the glycerine, one of the elements of the fluid, might keep the members of the body supple. The body was not put in the liquor immediately after death. The first afternoon I had only time to take the brain out, the second day I removed the tractus intestinalis, made the injections, and only after 48 hours was the specimen put in the solution. The cold weather (16 and 17 Aug.) aided by a free use of a wash of the Wickersheimer Fluid prevented all signs of decomposition. But after remaining in my solution for 10 or 14 days I observed that many parts of the body were swollen. To assist the penetration of the preservative fluid under the skin and prevent further decomposition, hundreds of acupunctures were made, whereafter the swelling was soon reduced.

I kept the body two months in the solution and as I was perfectly sure that the specimen was well preserved, I decided to send it to Prof. Virchow, and hope that this consignment will add a few facts to our knowledge of the Comparative Anatomy of the Races of Mankind.

After the specimen had been sent to Europe, I got a letter from Prof. Virchow (dated 27th Nov., 1880) in which he tells me that he himself did not believe that the Wickersheimer Fluid, while excellent for a cold climate, was suitable for use in tropical and subtropical regions; he advises me, in preserving such specimens as bodies of men: 1 to take the tractus intestinalis out and to preserve it in alcohol. 2 to inject a solution of Chloride of Zinc in the carotids and to put the brain in alcohol. 3, to inject also Glycerine and Carbolic Acid in some of the principal arteries, to keep the members movable. 4, to preserve the body in salt. He does not believe that Corrosive sublimate is of importance, but thinks, that Arsenic is good for preventing the formation of Fungi.

Dr. Hector whom I have seen lately in Melbourne has told me, that common sea-water after it has been boiled and filtered is an excellent preservative solution for many, principally marine animals.

TEMPERATURE OF THE ROCK IN THE MAGDALA SHAFT, VICTORIA.

BY N. DE MIKLOUHO-MACLAY.

Having ascertained that no observations of the temperature of rock have yet been made in the shaft of Magdala (the deepest mine in Australia) and being able to spare two days during my last stay in Melbourne, I went on April 4th to Stawell, provided with four thermometers, which Mr. R. L. T. Ellery, the Government Astronomer of Victoria, was kind enough to lend me for this occasion.

I do not find it necessary to mention here all the details of this excursion, and will give only the results of my observations; but I have to observe, that two holes of about 8 feet deep and 1½ inch in diameter were drilled in the rock (blue schist) on purpose to sink the thermometers into the rock, in the depth of 1,662 feet and 2002 feet, from the surface, while a third thermometer was introduced in the last rod of the diamond drill (2759 feet), which was not at work during the night hours.*

Two of the thermometers were read the first time after remaining in the rock for seven hours, the second time after eight hours; the third thermometer in the diamond drill only once after remaining in the rock for also eight hours.

The results are near and interesting enough, but would be more correct *i. e.*, more valuable, if selfregistering thermometers, which I could not obtain in Melbourne, had been used.

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* The diamond drill has since ceased work in the Magdala Shaft, having bored 521 feet below the bottom of the shaft, or to a total depth of 3,013 feet, or 2,232 feet below the level of the sea.

	4th April.			5th April.	
		10·30 p.m.		7 a.m.	
	3·10 p.m. Air temperature in the Shaft.	Air temperature in the Shaft.	Temperature of the Rock. Therm. remaining 7 hours in the rock.	Air temperature in the Shaft.	Temperature of the Rock. Therm. remaining 8 hours in the rock.
Surface	69°, 0 F. (20°, 0 C.)	62°, 6 F. (17°, 0 C.)	..	49°, 0 F. (9°, 5 C.)	..
1,662 Feet or 506 Meter	78°, 0 „ (25°, 0)	..	78°, 0 F. (25°, 5 C.)	..	78°, 0 F. (25°, 5 C.)
2,002 Feet or 610 Meter	79°, 0 „ (36°, 0)	..	80°, 0 F. (26°, 9 C.)	76° 0 F. (24°, 3 C.)	80°, 0 F. (26°, 9 C.)
2,400 Feet or 731 Meter	81°, 0 „ (27°, 0)	83°, 0 F. (28°, 4 C.)	..	78° 0 F. (25°, 5 C.)	..
2,759 Feet or 841 Meter	..	..	..	..	91° 0 F. (32°, 8 C.)

NOTES AND EXHIBITS.

Mr. Brazier exhibited a specimen of *Astreopora* and a large *Dolium* from the Harbour, and the two species of *Melania* described in his paper.

Mr. Stephen exhibited Fossil leaves from a Tertiary Deposit near Newstead, in reference to which Mr. C. E. Wilkinson read an extract from page 87 of Mineral Statistics of New South Wales for 1880.

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WEDNESDAY, JUNE 29TH, 1881.

The President, Dr. J. C. Cox, F.L.S., in the Chair.

MEMBERS ELECTED.

P. A. O'Shanesy, F.L.S., Emerald, Rockhampton.
H. A. Whittell, Esq., Survey Department.

DONATIONS.

Report of the Botanic Garden, Adelaide, 1880.

Archives Neerlandaiser des Sciences Haarlem, Vol. 15, Parts 3, 4 and 5.

Report of Zoological Station, Naples, 1880.

Verhandlungen of Royal Zoological and Botanical Society, Vienna, Volo 29 and 30.

Proceedings of the Natural History Society of Prussian Rhineland and Westphalia for 1879 and 1880. Bonn.

Annales de la Societe Meteorologique do Belgique, 1876-77-79.

PAPERS READ.

PLANTS OF NEW SOUTH WALES—No. II.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

Series III. CALYCIFLORÆ, *(Polypetalæ).*

Of this grand division of plants, which are generally characterized by having the stamens and petals inserted on the margin of a thin disk, the order *Leguminosæ* is by far the most extensive, comprehending in this colony 52 genera and 279 species, exclusive of those which are not indigenous. Amongst the 92 genera common to other parts of Australia, 29 of the Papilionaceæ, 6 of the Cæsalpinieæ, and 5 of the Mimoseæ do not occur in N. S. Wales. Comparing the leguminous plants of Victoria and Queensland (so far as recorded in the *Flora*) with those of this colony, they stand in the following order:

	Genera.	Species.
Queensland	73	254
New South Wales	52	279
Victoria	29	153

Whils, therefore, the genera increase considerably in proceeding from Victoria to the Northern parts of Australia, the species, as yet known, do not increase proportionally. As, however, N. S. Wales and Victoria have been more carefully examined than the interior of Queensland, it is highly probable that many species yet remain to be added to the Flora of the latter. The genera, perhaps, may admit of little alteration. By the following list, it will be seen, that of the genera not represented in N. S. Wales, the greater part occur in Queensland, and are common to India.

1. PAPILIONACEÆ.

1. *Jansonia*, W.A.
2. *Brachysema*, W. and N.A.
3. *Isotropis*, Q.L., W. and N.A.
4. *Burtonia*, Q.L., W. and N.A.
5. *Gastrolobium*, Q.L., W.A.
6. *Latrobea*, W.A.

7. *Pentadynamis*, S.A.
8. *Rothia*, N.A. and (I.)
9. *Ptychosema*, W.A.
10. *Lamprobium*, Q.L.
11. *Omocarpum*, Q.L., (I.)
12. *Œschynomene*, Q.L. and N.A.
13. *Smithia*, Q.L. and (I.)
14. *Pycnospora*, Q.L., and (I.)
15. *Uraria*, Q.L., N.A., and (I.)
16. *Lourea*, N.A., and (I.)
17. *Alysicarpus*, N.A., and (I.)
18. *Clitoria*, N.A. and (I.)
19. *Erythrina*, Q.L., N.A. & (I.)
20. *Phaseolus*, Q.L., N.A. and (I.)
21. *Dolichos*, N.A., and (I.)
22. *Dunbaria*, Q.L., and (I.)
23. *Atylosia*, Q.L., N.A., & (I.)
24. *Eriosema*, Q.L., N.A., & (I.)
25. *Flemingia*, Q.L., N.A., & (I.)
26. *Abrus*, Q.L., N.A., and (I.)
27. *Dalbergia*, Q.L., and (I.)
28. *Pongamia*, Q.L., N.A., & (I.)
29. *Barklya*, Q.L.

2. CÆSALPINEÆ.

1. *Guilandia*, Q.L., and (I.)
2. *Pterolobium*, Q.L., and (I.)
3. *Peltophorum*, Q.L., and (I.)
4. *Labichea*, N.A., and (I.)
5. *Tamarindus*, N.A., and (I.)
6. *Cynometra*, Q.L., and (I.)

3. MIMOSEÆ.

1. *Erythrophlæum*, Q.L., & (I.)
2. *Entada*, Q.L., and (I.)
3. *Dichrostachys*, N.A., and (I.)
4. *Adenanthera*, N.A., and (I.)
5. *Albizzia*, Q.L., W., N.A.&(I)[*]

From this list, it will be seen that the Leguminous plants of East Queensland, as Mr. Bentham remarks, have an East Asiatic character, though there are many genera which it has in common with New South Wales. On the other hand, of the 53 genera found in Victoria, there are 20 common to New South Wales and Tasmania. The genus *Acacia* is not only the largest of the Leguminosæ, but of all the phanerogamous genera, containing upwards of 300 species, for Baron F. von. Mueller has described several new species since the publication of the second volume of our Flora. Of these Tasmania has 17, Victoria 55,

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[*] Q.L.=Queensland; W. and N.A.=West and North Australia; I.=India.

New South Wales 87, and Queensland 61. These numbers need careful revision, especially in the last colony, but nevertheless they give an approximate idea of the great extent and geographical distribution of the species generally. It is worthy of remark that only one *(A. Farnesiana)* is common to tropical countries of the Old and New World, whilst with the exception of a few species in New Caledonia, the Indian Archipelago, and the Pacific Islands, nearly all the forms described in the *Flora Australiensis* are truly endemic. *A. decurrens* (the common Wattle), one of the most widely distributed species, extends from Tasmania, through South Australia, Victoria, and New South Wales into Queensland. Whilst *A. longifolia*, in one form or other, has a similar range. So far as New South Wales is concerned, the genus *Acacia* imparts a peculiar character to the vegetation; and in the far interior many of the plains derive a name from the frequent occurrence of *A. pendula* and *A. homolophylla.* The species, being for the most part harsh in their foliage and capable of enduring a very high temperature, seem peculiarly adapted for such localities; and, as appears from the occurrence of the genus in Tasmania, some species can endure a considerable amount of cold.

Whilst, however, certain alpine plants connect the Flora of N. S. Wales, Victoria, and Tasmania with that of New Zealand, the genus *Acacia* is not represented there, nor, according to the *Flora Australiensis*, do any forms of our Leguminosæ extend in that direction and to South America, excepting *Sophora.* Mr. Bentham, in taking a review of the Leguminosæ generally, states, that "of the 92 Australian genera, 33 are dispersed over the warmer regions of the Old and New World, of 20 other tropical genera, 13 are in Africa and Asia but not in America, 2 in America and Asia, but not in Africa, 4 in Asia alone, 1 *(Erythrophleum)* only in Africa; 4 more of the Australian genera belong to the temperate regions of the Northern Hemisphere, 1 *(Clianthus)* extends only to New Zealand, and 34 are endemic in

Australia." Of those endemic, 22 genera are represented in N. S. Wales, 17 in Victoria, and 25 in Queensland, thus showing that whilst the Flora of the last has many affinities with that of India, it has also numerous forms peculiar to the continent of Australia. On the whole, the *Leguminosæ* form the most extensive order in N. S. Wales, and next to the *Myrtaceæ*, it is the most important when considered in relation to industrial and medicinal properties. Some of the species have already obtained a place in the Pharmacopœia, and when the Medical Botany of Australia becomes more thoroughly investigated, it will be found that N. S. Wales affords in her *Leguminosæ* many valuable remedies. Some are known to be highly injurious to sheep and cattle, especially in dry and unfavourable seasons. Such are some of the *Swainsonias;* but those genera which have done the most mischief do not extend to New South Wales, but appear to be most abundant in Western and North-eastern Australia.

With regard to the introduced species of the Order, they are not numerous. The following is a list of them:

1. *Argyrolobium Andrewsianum*, (Stend.)
2. *Medicago sativa*, (Linn.)
3. *M. denticulata*, (Willd.)
4. *M. lupulina*, (Linn.)
5. *M. minima*, (Willd.)
6. *Trifolium pratense*, (Linn.)
7. *T. repens*, (Linn.)
8. *Vicia hirsuta*, (Koch.)
9. *V. sativa*, (Linn.)
10. *Ulex Europæus*, (Willd.)
11. *Cajanus bicolor*, (Dec.)

These plants have established themselves for the most part in the Southern districts of the colony, for *Cajanus bicolor*, or the Pigeon-Pea alone seems limited to the Northern districts and Queensland. *Medicago denticulata* grows abundantly in moist flats or near rivers, and beyond the Dividing Range. it is valuable for pasture, although injurious to cattle when they feed too ravenously on it. It is no uncommon thing to see beasts swollen to a large size and lying dead from the effects of the so-called "Trefoil." The burs of this plant are also very annoying in sheep-farming, as they adhere tenaciously to the fleeces and render the wool less valuable. *Melilotus parviflora*, sometimes called "Scented Trefoil," is a great pest in wheat-fields, and imparts an aromatic flavour to flour. *Trifolium repens*, or Dutch Clover is very widely spread in some parts of New South Wales, and forms, as it is termed "an excellent bottom in pastures." It is said that a single seedling will cover more than a yard square of ground in one season, whilst the plant generally affords abundance of succulent stalks and leaves when the grasses perish.

DESCRIPTION OF A NEW BULIMUS FROM NEW CALEDONIA.

BY J. BRAZIER, C.M.Z.S., &c.

*BULIMUS ROSSITERI, *n. sp.*

Shell imperforated, oblong-ovate, rather thick, light brown, covered with a horny reddish-chestnut periostraca, longitudinally somewhat rugosely striate, suture crenulated, encircled with a white narrow band; spire moderately elevated, convexly conoid, obtuse, about half the length of the shell, first three whorls decorticated, whorls six, moderately convex, the last large; aperture oblong ovate, subvertical, orange-red within; peristome rather thickened, more or less reflected; columella slightly expanded with a small oblique compressed fold extending over on to the body whorl in a thick callus plate and joined to the upper part of the aperture; peristome and columella bright orange red.

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*Type specimen deposited in the Museum of the Academy of Natural Sciences, Philadelphia.

Length 58 mill.; diam 28 mill.

Hab. Nehone Bay, North West Coast of New Caledonia.

This new and interesting species is quite distinct from any other form found in New Caledonia, the aperture is not earshaped and is destitute of any denticulation on the columella; it was found in an old deserted native village named Bonebondia, by my kinsman Mr. George Joseph Rossiter, this year, while selecting land for a plantation. This part of the island is quite new to the collector in all branches; I express my thanks to the finder for his liberality in sending me eight splendid examples.

ON THE NOMENCLATURE AND DISTRIBUTION OF THE GENUS PYTHIA, *Bolton*.

BY JAMES C. COX, M.D.

The genus Pythia was established by *Bolton* in 1798 in a Catalogue of his private Museum, edited by Roding.

The family Auriculacea of *Blainville*, of which Pythia is one of the genera, bears date 1824. The *Auriculidæ* are, says Pfeiffer, " a family of Mollusca, which breathe the external air by lung-like organs, and have no operculum, and are distinguished from the other families of Pulmonata by the following characters:

"The Animal is hermaphrodite; its head terminates in an obtuse, somewhat fringed snout; tentacles two, rather cylindrical which cannot be retracted like those of *Helicidæ;* eyes situated near the inner base of the tentacles; mantle thin with the margin thickened; foot elongated, bearing on its middle the spiral part of the body."

" Shell spiral, variously shaped; pillar generally plaited in all ages; body of the penultimate whorl usually toothed or plaited;

peritreme sharp and straight or expanded, thickened, often toothed or transversely ribbed."

And has established the following division of the Family:

Family AURICULACEA, Blainville.

1*st Sub-Family Otinea.*

Which is divided into two genera.

A. Otina, *Gray.*
B. Camptonyx, *Benson.*

2*nd Sub-Family Melampea.*

Is divided into three genera.

C. Melampus, *Montford.*
D. Marinula, *King.*
E. Pedipes, *Adanson.*

3r*d Sub-Family Auriculea.*

Is divided into nine genera.

F. Pythia, *Bolton*, the genus now under consideration.
G. Plecotrema, *H. and A. Adams.*
H. Cassidula, *Ferussac.*
I. Auriculus, *Montfort.*
K. Alexia, *Leach.*
L. Blauneria, *Shuttleworth.*
M. Luconia, *Gray.*
N. Coilostele, *Benson.*
O. Carychium, *O. F. Müller.*

The genus Pythia was defined by *Pfeiffer* in 1856 in his Monographia Auriculaceorum Viventium as follows—" Shell depressed ovate; whorls provided on both sides with varices, forming a more or less distinct zigzag streak on the compressed sides; aperture externally wide, narrowed within by a strong collumellar, and several strong parietal plaits; right margin of the peristome furnished within with an oblique dentiferous callus, which usually appears externally."

The most recent Monograph written on this genus was in 1876, by the late lamented Louis Pfeiffer, in his Monographiæ Auriculaceorum, it was in fact the last work written by that able and accomplished author, in which he records no less than forty-eight species of this genus and divides them into four sections.

1st Those species with the umbilicus transversely rimate.

2nd Those with the umbilicus rather closed.

3rd Those where the umbilicus is openly perforated or umbilicated.

4th Doubtful species.

I am not inclined to place much value on the division of the genus by the condition of the umbilicus. I find that it varies very much in the same species in mature specimens even collected at the same locality. Since the publication of the valuable Monagraph mentioned, four other species have been described, so that up to the present date I find the number of species recorded as *fifty-two.*

Many of the species recorded by Pfeiffer he had never had an opportunity of examining, otherwise his master-hand, I am quite sure, would have considerably reduced this number. Pfeiffer was too honourable a Monographer to overlook or despise the work of his fellow Conchologists; he never rejected the records of others until he had had an opportunity of examining the specimens himself, then he was not slow to point out what he considered erroneous repetition, but it was always done with a respect that has made his loss so universally lamented.

This genus, like many others, has received a variety of names, in fact up to a certain period it would almost appear that every author writing on the subject considered it necessary to give it a new appellation. The first species of the genus recorded was by Linneus in 1758, in his Systema Naturæ, 10th edition, Vol. I., p. 768, No. 571, as *Helix Scarabæus;* this same species was described in 1774 by O. F. Müller as *Helix Pythia*, in his Historia Vermium. In 1798 Bolton described it as *Pythia Helicina*, and in 1810 Montford described this same species as *Sarabus Imbrium*. In 1822, Lamarck described it as *Auricula Scarabæus*, in his Historie des Animaux sans Vertebres, and subsequently in 1837 Beck described it as *Polydonta Listoriana*. Each of these generic names in its turn have been used by Monographers to place this and other species of the genus under, but it is evident from the dates given that the name *Pythia* has priority, still some able conchologists think differently and up to a very recent date species of this genus continue to be described as *Scarabus*. In the beautifully illustrated Monograph of this genus by the late Lovel Reeve, the species are all described as *Scarabus*. This liberty on the part of authors is much to be regretted as it adds considerably to the trouble of Nomenclature, which every year it is felt more and more necessary to give in full in writing on any genus or species.

Of the fifty-two species of which I have recorded the nomenclature and distribution, it will be found that all are strictly tropical and none of them are found on the shores or on islands washed by the Atlantic Ocean. Their true position is very limited, and ranges from between 25° North Latitude and 25° South Latitude and 80° East Longitude and 130° West Longitude. Commencing from Ceylon in about 80° East Longitude, where we find two species, we have to travel east to find the homes of this peculiar genus, no species has been recorded as coming from Madagascar, Mauritius or the East Coast of Africa; two or three species are found in China, much farther North than Ceylon, others again on the Southern shores of India and several at the Philippine Isles; step by step we trace them from the Malay Peninsular to Sumatra, Borneo, Celebes, and through the groups of small Islands to the Caroline Islands northwards, to the Southern shores of New Guinea and probably on the Northern shores also if they were looked for; recent researches have traced their presence on the North-east shores of our great Continent, between this point and the Caroline Islands moving east we find them almost universally distributed over the Islands met with as far as 130° of West Longitude, including the Admiralty, Solomon, Marshall, Louisiade, Gilbert, Ellice, New Hebrides, New Caledonia, Loyalty, Fiji, Navigators, Friendly, Cook and Society Islands; they have not been found to pass as far East as the American Coast in the Pacific, nor has New Zealand to the South been favoured with their presence.

From these facts it is evident that this genus will always be of importance to Australasian Collectors. Every lot of shells I have received from the Pacific Islands contains specimens in more or less abundance of this genus; in the Solomon Group especially, they are very abundant and extremely variable in their size, shape, solidity and other characters; within a very few years I believe that their exact distribution will be almost perfectly known and if I am not mistaken, the number of species instead of increasing will be materially lessened, as I feel sure that many so called species are mere local varieties. I trust that by freely circulating this paper amongst the collectors in the Pacific and those of our compeers in other parts of the world, the objects I have in view may be attained, and our Australian Collectors may be induced to pay more attention to this genus than it has hitherto found at their hands, and to record their experience. The facts now recorded are far from perfect, still they are the observation of years and are worthy of notice.

1*** PYTHIA ABBREVIATA, *Blainville.*

Scarabus abbreviatus, Blain., in Dictionaire des Sciences Naturelles Vol xlviii., p. 31, 1827.

Polydonda abbreviata, Beck, in Index Mollus., p. 101, 1837.

Pythia ? abbreviata, Pfr., in Synop. Auric. in Malak. Blatt., p. 149, 1854.

Pythia abbreviata, Pfr., in Mon. Auric. Viv. p. 85, 1856; Pfr., in Brit. Mus. Cat. Auriculidæ, p. 64, 1857; Pfr. in Mon. Auriculaceorum, p. 341, 1876.

Habitat. Marion de Proce, a small isolated island of the Indian Ocean.

Pfeiffer who has examined more closely into this genus than any other author, considers this a very doubtful species.

2*** PYTHIA ACUTA, *Hombron et Jacquinot.*

Scarabus acuta, Homb. et Jacq., in Zoologie du Voyage au Pôle Sud., Vol. v., p. 39, pl. 10, fig. 1—3.

Pythia acuta, Beck, in Index Mollus., p. 104, 1837, is according to *Pfeiffer*, Marinula acuta, *Orbigny*, see Pfr., Mon. Auric. Viv. p. 60, 61, 1856; Pfr., in Mon. Auric. Viv., p. 98, 1856; Pfr., in Brit. Mus. Cat. Auric., p. 74, 1857; Pfr. in Mon. Auriculaceorum, p. 342, 1876; Pease, in Pro. Zool. Soc. Lon., p. 477, 1871.

Habitat. Hogolen Islands. *Pease*, in Pro. Zool. Soc. Lon., p. 477, 1871.

3*** PYTHIA ALBOVARICOSA, *Pfeiffer.*

Pythia albovaricosa, Pfeiffer, in Zeitschrift fur Malakazoologie, p. 190, 1853; Pfr., in Mon. Auric. Viv., p. 87, 1856; in Brit. Mus. Cat. Auriculidæ, p. 66, 1857, by Pfeiffer; in Pfr's. Synopsis Auriculaceorum in Malak. Blatt. p. 145, i., 1854; in Novitates Conch. by Pfr., Vol. i., p. 6, pl. iii., fig. 1, 2, 1854—1860; H. and A. Adams, Gen. Recent Moll., p. 240, Vol. ii., 1853—1856; in Pfr's. Mon. Auriculaceorum, p. 341, 1876.

Scarabus albovaricosus, in Reeve's Conc. Icon., Vol. xii., Mon. Scarabus, Sp. 4, pl. i., fig. a. b., 1860.

Habitat. Island of Celebes, *Pfr.*, in Brit. Mus. Cat. The same locality is given by Reeve in his *Conc. Icon.* on the authority of Cuming—should this be correct it is strange that no specimens have found their way into the Indian Museum at Calcutta, at least no record of it is made by Mr. Geoffroy Neville, the able and accomplished author of the "Hand List of Mollusca in the Indian Museum at Calcutta, 1878;" from this fact I doubt if it is found there at all.

It is one of the most abundant and widely distributed species at the Solomon Islands, and it is the largest species found there. I have specimens of it from Makera Harbour, San Christoval Isl., Ugi, a small island off San Christoval, also Santa Catalina and Isabel Islands all of the Southern division of the Solomon Group, so far I have not received any specimens north of these localities.

4*** PYTHIA ARGENVILLEI, *Pfeiffer.*

Pythia Argenvillei, Pfr., in Zeitschrift fur Malakozoologie, p. 191, 1853; in Pfr., Synopsis, Auric, in Malak. Blatt i., p. 145, 1854; Pfr's., Mon. Auric. Viv. p. 96, 1856; Pfr. in Brit. Mus. Cat. Auriculidæ, p. 73, 1857; Pfr. Novet. Conch., Vol. iii., p. 361, pl. 83, fig. 15-17; Pfr's. Mon. Auriculaceorum, p. 342, 1876; D'Argenville, La Conch. Augmentea de la Zoomorpliose, 1757, t. 9 (12) f. T.; H. and A. Adams, Gen. Rec. Moll., Vol. ii., p. 240, 1853 and 1856.

Scarabus Argenvillei, Reeve, Conc. Icon. Mon. Scarabus, Vol. xii., Sp. 24, pl. iii., fig. 24, 1860; at least I presume this is Pfeiffer's species, but the latter named author is quite ignored by Reeve as the describer of the species; it would appear from Reeve's Mon. that the species was his own. Strange to say also, Reeve does not give any habitat for this species, although it was recorded by Pfeiffer in 1853, some eight years before Reeve's Monograph was published.

This species is not recorded by Paetel in his Catalog der Conchyliensammlung, 1873.

Habitat. North Coast of Australia. *Pfeiffer,* Brit. Mus. Cat.

This is an abundant, but very local species. I have never received it from any other locality than the one as above recorded.

It is also very constant in its characters. I am unable to ascertain in what way it is referred to by D'Argenville as mentioned by Pfeiffer.

Pfeiffer records Var. B. a small, pale grey variety, I presume from the same locality scarcely worthy of record.

5 PYTHIA AVELLANA, *Reeve.*

Scarabus avellana, Reeve, Conch. Icon., Vol. xii., genus Scarabus 1860, Spe. 27, pl. iii., fig. 27.

Habitat. The Island of Madura, near Java. *Reeve*, on the authority of Cuming.

Pfeiffer has not taken any notice of this species in his Monograph on the Auriculacea published in 1876. Paetel has followed his example, and according to G. Neville, no specimens of it have reached the Indian Museum at Calcutta. I have not Issel's Catalogue to refer to, otherwise it might clear up difficulties and doubts.

6*** PYTHIA BORNEENSIS, *A. Adams.*

Scarabus Borneensis, A. Adams, in Proceedings of the Zoological Society of London, 1850, p. 152; in Reeve, Conc. Icon. Sp. 11, pl. ii., 1860; in Issel's Molluschi Borneensis, p. 60, 1874; A. Adams, in Ann. and Mag., Nat. Hist., Vol. viii., p. 70.

Pythia Borneensis, in Pfr's Synopsis Auriculaceorum in Mal. Blätt. i., 1854, p. 145; in Pfr's Mon. Auric. Viv. p. 95-96, 1856; in Pfr's Novitates Conch., Vol. iii., pl. lxxxiii., fig. 11, 12, p. 359 (*not* pl. xxviii, mentioned in Mon. Auric, 1876, p. 342); in Pfr's Mon. Auriculaceorum, p. 342, 1876; in Pfr's Brit. Mus. Cat. Auriculidæ, p. 72, 1857; in H. and A. Adams, Gen. Rec. Moll., Vol. ii., p. 240, 1858.

Habitat. Borneo, Pfr., Reeve, on the authority of Cuming. Issel includes it in his Molluschi Borneensis, but it is not recorded by G. Neville in his Hand List of Mollusca in the Indian

Museum at Calcutta, 1878. Nor is this species included by Paetel in his Catalogue der Conchylien, Sammbung, 1873. I can only conclude that this species is either extremely rare, not having been seen by these authors, or that some doubt exists in their minds as to its being a distinct species.

7**** PYTHIA CARINATA, *Beck.*

Polydonta carinata, Bech., Indian Molluscorum præsentis ævi Musei prine august Christiani Frederici, 1837, p. 101, n. 1 (non discripta).

Pythia ? carinata, in Pfr. Mon. Auriculaceorum, 1876, p. 343; in Pfr., Mon. Auric. Viv., p. 79, 1856, see obs. 2.

Habitat. Sinsapore or Sincapore, Beck.

No mention is made to this species in the Hand List of Mollusca in the Indian Museum published at Calcutta by G. Nevill in 1878.

The habitat given by Beck, Sinsapore or Sincapore (Singapore) has not been verified by those who have been working recently in that field.

8*** PYTHIA CASTANEA, *Lesson.*

Scarabus castaneus, Lesson, in Voyage de la Coquille, Zool. ii., p. 336, p. x., fig. 7, 1830; in Martini and Chem. Conch. Cab. Auriculacea, p. 61, 1844, pl. ix., fig. 1, 2; in Reeve, Conch. Icon. Sp. 3, Vol. xii., pl. i., fig. 3, Mon. Scarabus, 1860; Reeve in Ann. and Mag. Nat. Hist., Vol. ix., p. 220, 18 , pl. iv., fig. 10; in Reeve, Conch. Syst., Vol. ii., pl. 188, fig. 10, 1842; A. Adams, in Proc. Zool. Soc., 1850, p. 150; A. Adams, in Ann. and Mag. Nat. Hist., Vol. viii., p. 69, 18 .

Polydonta castanea, in Beck's Index Mollus. p. 101, 1837.

Auricula scarabeus, Var. Desh. in Encyclopédie Methodique, nouv Ed. by Lamarck, p. 328, 1838.

Pythia castanea, Mörch, in Catalogus Conchyliorum Comes de Yoldi, p.37, 1852; Pfr. in Synopsis Auric in Malak. Blätt., p. 149, 1854; Pfr., in Mon. Auric. Viv., p 91, 1856; Pfr, in Brit. Mus. Cat. Auriculidæ, p. 69, 1857; Pfr., in Mon. Auriculaceorum p. 342, 1876; Neville, in Hand List of Mollusca in the Indian Museum at Calcutta, p. 221, 1878.

Habitat. Waigiou, Island of Zebu, Philippine Islands, Pfr. in Mon. of 1876. Waygeeoo Pfr., on the authority of Lesson. Island of Moluccas, Pfr. on the authority of Beck. Sibonga, Island of Zebu, Philippine Islands (in the Woods) Reeve on the authority of Cuming. Katchall, Nicobar Islands and from Borneo Strait, G. Neville, on the Authority of Dr. Stoliczka.

G. Neville in his Hand List of the Mollusca in the Indian Museum at Calcutta, p. 221, makes a *var minor* of this species and which he considers identical with A. Adams' species *imperforata* "[juv? =*P. imperforata*, A. Ad.]" collected by Stoliczka and de Roepstorff at Camorta and Nicobars.

Neville also considers it propable that *Pythia tortuosa* of Mousson is only a variety of this species judging from the specimens he had received from Futuna ex Museum Godeffroy.

9*** PYTHIA CECILLEI, *Philippi.*

Scarabus cecillei, Phil. in Zeitschrift für Malakozoologie, p. 122, 1847; A. Adams, in Pro. Zool. Soc., 1850, p. 149; Reeve, Mon. Scarabus in Conc. Icon., Vol. xii., Sp. 20, pl. iii., fig. 20, 1860; A. Adams, in Ann. and Mag. Nat. Hist., Vol. viii., p. 68.

Pythia Cecillei, Pfr. in Mon. Auric. Viv. p. 97, 1856; Pfr., in Brit. Mus. Cat. p. 74, 1857; Pfr., in Novitates Conch. Vol. iii., pl. lxxxiii., (not xxviii.) p. 355, fig. 3, 4. 1867, 1869; Pfr. in Mon. Auriculacea, p. 342, 1876; Paetel, in Catalog der Conch., Sammlung, p. 114, 1973; H. and A. Adams, Gen. Rect. Moll., Vol. ii., p. 240, 1858.

Habitat. China, on the authority of Admiral Cecille, of the French Navy.

This species does not appear to have found its way into the Indian Museum at Calcutta.

10*** PYTHIA CELEBENSIS, *Pfeiffer.*

Pythia celebensis, Pfr., in Proceedings of the Zoological Society of London, 1854, p. 299; Pfr. in Mon. Auric. Viv., p. 89, 1856; Pfr. in Brit. Mus. Cat. Auriculidæ, p. 67 and 68, 1857; Pfr., in Mon. Auriculaceorum, p. 342, 1876; H. and A. Adrms, in Gen. Rec. Moll., Vol. ii., p. 240, 1858.

Scarabus celebensis, Reeve, Mon. Scarabus, Conc. Icon. Sp. 1, pl. 1, fig. 1, 1863.

Habitat. Isle of Celebes, Pfr. and Reeve, on the authority of Cuming.

11* PYTHIA CEYLANICA, *Pfeiffer*, (Ceylonica).

Pythia Ceylanica, Pfr., in Zeitschrift für Malakozoologie, p. 192, 1853; Pfr., in Synopsis Auric. in Mal. Blätt., p. 149, 1854; Pfr. in Mon. Auric. Viv. p. 78, 1856; Pfr. in. Mus. Cat. Auriculidæ, p. 58, 1857; Pfr., in Mon. Auriculaceorum, p. 335, 1876; Pfr. in Novit. Conch., Vol. iii.. p. 354, pl. lxxxiii., fig. 1, 2; H. Neville's Enumeratio Heliceorum et Pneumonoporum Insulæ Ceylon, p. 4, 1871.

Pythia Ceylonica, G. Neville, in Hand List Moll. in Ind. Mus. p. 222, 1878.

Scarabus Ceylanicus, Reeve, Mon. Scarabus, Vol. xii., Conc. Icon. Sp. 12, pl. iii.

Habitat. Ceylon, Pfr. and Reeve, on the authority of Cuming. Balipiti, Ceylon, G. Neville, in Hand List Mol. Ind. Mus. at Calcutta, 1878. Neville, it will be observed, has altered the spelling of Pfr's name from Ceylanica to Ceylonica, no doubt it was a mistake originally by Pfr., and the error has been perpetuated. I see no reason why the correction should not be made without changing the authority as Mr. Neville has done.

12*** PYTHIA CHALCOSTOMA, A. Adams.

Scarabus chalcostomus, A. Adams, in Proceedings of the Zoological Society of London, 1850, p. 152; A. Adams, in Ann. and Mag. Nat. Hist., Vol. viii., p. 70, 2nd series; Reeve, in Conc. Icon. Mon. Scarabus, Vol. xii., 1860, Sp. 8, pl. i., fig. 8; Gassies, Faune Conchyliologique tenestre et Fluvio-lucustre de la Nouvelle Calédoniæ, p. 55, pl. iii., fig. 5, part i., 1863, also in part ii., p. 100, 1869.

Pythia chalcostoma, Pfr., in Synop. Auric. in Malak. Blätt, p. 149, 1854; Pfr., in Mon. Auric. Viven, p. 87, 1856; Pfr., in Brit. Mus. Cat. Auric. p. 66, 1857; Pfr., in Mon. Auriculaceorum, p. 341, 1876; H. and A. Adams, in Gen. Rec. Moll., Vol. ii., p. 240, 1859; G. Neville, in Hand List of Moll. in the Indian Mus. at Calcutta, p. 222, 1978 [?=*P. Lessoni*, Blain., Var.].

Habitat Solomon Islands, D'Urville, Pfr., and Reeve, the two latter on the authority of Cuming. Isles of Art and Tuo, New Caledonia, Montrouzier. New Caledonia Neville on the authority of Morelet, and Maré, Lifu, Loyalty Islands, on the authority of F. L. Layard. Mr. Brazier found it on Ysabel Island, Solomon Islands. I possess specimens of it from the same Island, and also from Santa Catalina a small island close to San Christoval of the Solomon group.

The figure given by Reeve of this species differs so very much from the figure of it given by Gassies, that I cannot help thinking there must be some mistake about it. I have never seen a specimen at all approaching Reeve's figure from New Caledonia, the specimens from the Solomon Islands not only resemble Reeve's figure, but correspond in every way with the original discription of the species.

13*** PYTHIA COSTULATA, *Kuster*.

Scarabus costulatus, Kuster in Martini and Chemnitz, Conchylien Cabinet Mon. Auriculacea 1844, pl. 9, fig. 3.

Pythia costulata, Pfr. in Synop. Auric. in Malak., Blätt., p. 149, 1854; Pfr. in Mon. Auric. Viv. p. 87, 1856; Pfr. in Brit. Mus. Cat. Auric. p. 65, 1857; Pfr. in Mon. Auriculaceorum, p. 341, 1876.

Habitat. East Indies, Kuster, and Pfr.

This species is not figured by Reeve, nor is it mentioned in G. Neville's Hand List of Indian Mollusca, the latter fact throws considerable doubt on the habitat recorded; it would be interesting to know in what Museum the original type specimens are to be found.

14*** PYTHIA CRASSIDENS, *Hombron et Jacquinot*.

Scarabus crassidens, Homb. et Jacq., Zoologie du Voyage au Pol. Sud., Vol. v., p. 40, pl. 10, fig. 12, 13, 14.

Pythia crassidens, Pfr., in Mon. Auric. Viven., p. 99, 1856; Pfr., Brit. Mus. Cat. Auriculidæ, 1857, p. 74; Pfr. Mon. Auriculacea, 1876, p. 343.

Habitat. Isle of Amboyna, Homb. et Jacq., also the same by Pfr. in Brit. Mus. Cat.

15** PYTHIA CROSSEANA, *Gassies*.

Scarabus crosseanus, Gassies, in Journal de Conchyliologie, Vol. xviii., p. 144, 1870; in Faune Nouv Calédonie part ii., p. 102, pl. 7, fig. 4, 1873.

Pythia crosseana, Pfr., in Monographiæ Auriculaceorum, 1876, p. 339.

Habitat. Island of Ouvea, Loyalty Islands, Gassies, on the authority of Lambert.

16*** PYTHIA CUMINGIANA, *Petit.*

Scarabus Cumingiana, Petit, in the Proceedings of the Zoological Society of London, 1843, p. 3; Kuster in Martini and Chemnitz Conchylien, Cabinet, Mon. Auriculacea, p. 63, pl. 9, fig. 5, 6, 5* 1844; A. Adams and Reeve, in Voy. Samarang, Mollusca, p. 56, pl. 14, fig. 16, 1948-1850; A. Adams in Pro. Zool. Soc., Lond., 1850, p 150; A. Adams, in Ann. and Mag. Nat. Hist. 2nd Series Vol. viii., p. 68, 18 ; Reeve in Conch. Icon. Vol. xii., Sp. 12, pl. ii., fig. 12, 1860.

Pythia Cumingiana, Pfr., in Mon. Auric. Viven., p. 89, 1856; Pfr., in Brit. Mus. Cat. Ariculacea, p 68, 1857; Pfr., in Mon. Auriculaceorum, p. 342, 1876; Pätel, Catalog der Conchylien, Sammlung, p. 114, 1873; H. and A. Adams, in Gen. Rec. Moll. Vol. ii., p. 240, 1858.

Habitat. Boljoon, Island of Zebu and Tanhay, Island of Negros Philippine Islands, Pfr. and Reeve, on the authority of Cuming.

17**** PYTHIA DILATATA, *Beck.*

Polydonta dilatata, Beck, Index Molluscorum præsentis ævi Musei Princ August Christiani Frederici, 1837.

Scarabus imbrium, Guérin, Iconographie du règne animal pl. vii., fig. 6? Gray, in Griffith, the Animal Kingdom by Cuvier, Mollusca et Radiata xii., 1834, pl. 27, fig. 1.

Pythia dilatata, Pfr., in Mon. Auric. Viven, 1852, p. 99; Pfr., in Brit. Mus. Cat. Auriculidæ, p. 75, 1857; in Pfr., Mon. Auriculaceorum, p. 343, 1876.

Habitat. Philippine Islands, Pfeiffer, on the authority of Griffith, in Anim. Kingdom.

18**** PYTHIA GIBBOSA, *Beck.*

Polydonta gibbosa, Beck, Index Molluscorum præsentis ævi Musei Princi August Christiani Friderici, p. 101, N. 3, 1837.

Pythia gibbosa, Pfr., in Mon. Auric. Viven., p. 99, 1852, "absque ulla indicatione"; Pfr., in Brit. Mus. Cat. Auriculidæ, p. 75, 1857; Pfr., in Mon. Auriculaceorum, p. 343, 1876.

No habitat of this supposed species has been recorded, and so far as I can discover with the limited material at my disposal it has never been described.

19** PYTHIA HEPATICA, *Pfeiffer*.

Pythia hepatica, Pfr., in Malak. Blätter p. 174, 1856; Pfr., in Novitates Conchologicæ, Vol. iii., p. 357, pl. lxxxiii. (not xxviii.) fig. 7, 8; Pfr., in Mon. Auriculaceorum, p. 338, 1876.

The habitat of this species was not known to Pfeiffer, but from his minute and careful description of the species I have no doubt it will soon be discovered.

I may mention here that all the references to Pfeiffer's plates of the *Pythia* in his Novitates Conchologicæ in his last monograph are incorrect.

I venture to predict that this species is from the North-east Coast of Australia.

20* PYTHIA INFLATA, *Pfeiffer*.

Pythia inflata, Pfr., in Zeitschrift für Malak., p. 192, 1853; Pfr., in Mon. Auric. Viven., p. 76, 1856; Pfr., in Novit. Conch. Vol. i., p. 7, 1854-1860, pl. iii., fig. 3, 4; Pfr., in Brit. Mus. Cat. Auriculidæ, p. 57, 1957; Pfr., in Mon. Auriculaceorum, p. 335, 1876.

Scarabus inflatus, Reeve, in Conch. Icon. Mon. Scarabus, Vol. xii., 1860, sp. 25, pl. iii., fig. 25; Var. Metcalf, in Pro. Zool. Soc., Lon., 1851; Issel, Molluschi Borneensis, 1864. p. 61.

Habitat. Borneo, Pfr. and Reeve, on the authority of Cuming which Issel coroborates in his recent work.

21** PYTHIA IMPERFORATA, *A. Adams.*

Scarabus imperforatus, A. Adams, in Proceedings of Zoological Society of London, 1850, p. 151; A. Adams, in Ann. and Mag. Nat. Hist. 2nd series, Vol. viii., p. 70; Reeve, in Conch. Icon. Mon. Scarabus, Vol. xii., pl. ii., Sp. 10; Issel, in Molluschi Borneensis, 1874, p. 61; in J. B. Gassies' Faune Conchyliologique de la Nouvelle-Calédoniæ, 2nd Part, p. 101, 1872.

Pythia imperforata, Pfr., in Synopsis Auriculaceorum in Malakozoologie Blätter t., p. 145; Pfr., in Mon. Auriculaceorum Viventium, 1856, p. 80; Pfr., in Brit. Mus. Cat. p. 60, 1857; Pfr., in Monographiæ Auriculaceorum, 1876, p. 339; H. and A. Adams, in Genera Rec. Mollus., Vol. ii., 1851, p. 239-240; Patel, in Catalogue der Conchyliensammlung, 1873, p. 114; Neville, in Hand List Moll., in Indian Mus. at Calcutta, p. 521, 1878.

Habitat. The island of Borneo, Adams, on the authority of Cuming, also Reeve, on the same authority.

Camorta and Nicobars, Neville, in Hand List of Mollusca in the Indian Museum at Calcutta, on the authority of Dr. F. Stoliczka and F. A. de Roepstorff. Neville considers his specimens the *variety minor* of *Pythia castanea*, Lesson. Katow and Ethel River, New Guinea, Brazier in Pro. Linn. Soc., New South Wales, 1878, Vol. ii., p. 128; these specimens are in the Macleay Collection, Sydney, N.S.W.

22*** PYTHIA INSULARIS, *Hombron et Jacquinot.*

Scarabus insularis, Homb. et Jac., Zoologie du Voyage au Pôl. Sud., Vol. v., p. 40, pl. 10, fig. 15, 16, 17.

Pythia insularis, Pfr., Mon. Auric. Viven., 1856, p. 85; Pfr., in Brit. Mus. Cat. Auriculidæ, 1857, p. 64; Pfr., Monographiæ Auriculaceorum, 1876, p. 341.

Habitat. Solomon Islands, Homb. et Jacq.

23* PYTHIA INTERMEDIA, *Gassies.*

Scarabus intermedius, Gassies, in Journal de Conchyliologie, 1879, p. 130; Gassies, in Faune Conchyliologique de la Nouvelle Calédonie, by J. B. Gassies, part 3rd, pl. iii., fig. 16, 1880.

Habitat. Mare, Loyalty Islands, Gassies, on the authority of Mr. Richard Rossiter of New Caledonia, a very accurate observer.

24* PYTHIA LACTEOLA, *Gassies.*

Scarabus lacteolus, Gassies, in Journal de Conchyliologie, 1879, p. 131; Gassies, in Faune Conchyliologique de la Nouvelle Calédonie par J. B. Gassies, p. 58, 1880, pl. iii., p. 3rd, fig. 15.

Habitat. Maré, Loyalty Islands, Gassies, on the authority of Mr. Richard Rossiter of Nouméa, New Caledonia.

25** PYTHIA LEKITHOSTOMA, *Reeve.*

Scarabus Lekithostoma, Reeve, in Annals and Magazine of Natural History, 1842, Vol. ix., p. 220, p. 4, fig. 6; in Reeve's Conch. Systematica, Vol. ii., p. 168, pl. 188, fig. 6, 1842; in Reeve, Conch. Icon. Vol. xii., Monograph Scarabus, Vol xii., Sp. 2, pl. 1, fig. 2 a. b.; A. Adams, in Pro. Zool, Soc., 1850, p. 150, also in Ann. and Mag. Nat. Hist. 2nd series, Vol. viii., p. 69; in Küster, Martini et Chemnitz, Conch. Cabinet, 1844, p. 65, pl. 9, fig. 10.

Pythia Lekithostoma, Pfr., Synop. Auric. in Mal. Blat. 1854, n. 77; Pfr., Mon. Auric. Viven., 1856, p. 76; Pfr., Monographiæ Auriculaceorum, 1876, p. 336; Pfr., in Brit. Mus. Cat., 1857, p. 59. Pätel, in Catalogue der Conchyliensammlung, 1873, p. 114. G. Neville's Hand List of Mollusca in the Indian Museum at Calcutta, 1878, p. 222.

Habitat. Island of Guam, Pfr., Pätel and Neville, the latter on the authority of Prof. W. Newcombe of Cornell University, America.

I have had specimens of this species in my collection for many years, collected by Mr. Rossiter, at the Island of Guam.

26*** PYTHIA LEOPARDA, *Reeve.*

Scarabus leopardus, Reeve, in Conchologia Iconica, 1860, Vol. xii., Monograph Scarabus, Sp. 14, pl. ii., fig. 14; in Gassies, Faune Conchyliologique Terrestre et Fluvio-lacustre de la Nouvelle Calédonie, p. 55, pl. iii., fig. 5, 1863, part 2nd 1871, p. 100.

Pythia leopardus, Pfr., in Mon. Auriculaceorum, 1876, p. 342.

Habitat. Island of Tuo, New Caledonia, Gassies. Reeve acknowledges that this species is founded on very slight characters and if his figure is compared with that of Gassies, it is evident that two distinct species are figured. Reeve's figure is only an intermediate form between *undata* and his representation of *petiveriana; undata* again passes into *nux*, *imperforata* and *borneensis*. The figure given of it by Gassies passes by too easy gradation into *nux*, *imperforata*, *borneensis*, *undata* and *crosseana*. A gradual gradation from one to the other is very manifest, I have specimens of *nux* before me which so thoroughly illustrate this gradation that I doubt if any of these species should stand except the one whose name has priority.

27** PYTHIA LENTIGINOSA, *Garrett.*

Pythia lentiginosa, Garrett, in American Journal of Conchology 1872, Vol. vii., p. 4, p. 220, pl. 19, fig. 4; Schmeltz, Catalogue of Museum Godeffroy, No, v., 1874, p. 87; G. Neville, Hand List of Mollusca in the Indian Museum at Calcutta, 1878, p. 222.

Habitat. Taviuni Island, Viti Islands Garrett; Savinni Island Neville, on the authority of Godeffroy—probably intended for Savii Island, Samoan Iislands.

28*** PYTHIA MACGILLIVRAYI, *Pfeiffer.*

Pythia Macgillivrayi, Pfr., in Proceedings of the Zoological Society of London, 1854, p. 298; Pfr. in Mon. Auric. Viv., 1856,

p. 97; Pfr., in Brit. Mus. Cat. Auriculidæ, 1857; Pfr., in Monographiæ Auriculaceorum, 1876, p. 343; Pfr., in Novit. Conch., Vol. iii., p. 360, pl. lxxxiii., fig. 13, 14. H. and A. Adams, Gen. Recent. Mollusca, Vol. II., p. 239-240. Pätel in Cat. der Conch., p. 114, 1873.

Habitat. Island of Aneiteum, New Hebrides, Pfr., on the authority of Macgillivray.

29* PYTHIA MAURULA, *Gassies.*

Scarabus maurulus, Gassies, in Journal de Conchyliologie, Vol. xviii., 1870, p. 143; in Gassies Faune Novel Caledoniæ, 1871, part ii., p. 103, pl. 7, fig. 5, (non 6).

Pythia maurulus, Pfr., in Mon. Auriculaceorum, 1876, p. 335, 1872.

Habitat. New Caledonia, Gassies on the authority of Lambert, Deplanches and Viellard. I have specimens of this species from Mr. Rossiter of Noumea, from Lifou, Loyalty Islands,

30* PYTHIA MINOR, *Gassies.*

Scarabus minor, Gassies, in Faune Conchyliologique Terrestie et Fluvio-lacustre de la Novelle Calédoniæ, p. 57, pl. iii., fig. 8, 1863, part 2nd 1871, p. 190.

Pythia minor, Pfr., in Mon. Auriculaceorum, 1876, p. 336.

Habitat. Island of Tuo, New Caledonia, Gassies, on the authority of Montrouzer. I possess specimens of this species sent to me by Mr. R. Rossiter, from Prony Bay.

Care must be taken that the name of this species is not confounded with what G. Neville in his Hand List of Mollusca in the Indian Museum of Calcutta has designated a variety of *Pythia castanea*, as "Var. Minor"; the designation should be changed.

31** PYTHIA NIGRICANS, *Pfeiffer*.

Pythia nigricans, Pfr., in Malakozoologie, Blätter, 1857 (non 1856 Pfr.) p. 174; Pfr., in Novit. Conch., Vol. iii., 1867-1869, Sp. 482, p. 358, pl. lxxxiii., fig. 9, 10; Pfr., in Cat. Brit. Mus. Auriculidæ, 1857, p. 64; Pfr., in Monograph Auriculaceorum, p. 338, 1876.

Habitat. Unknown.

Pfeiffer's figure of this species in his Novitates Conch. is very like specimens found on the North-east Coast of Queensland, Australia.

32** PYTHIA NUX, *Reeve*.

Scarabus nux, Reeve, Conchologia Iconica, Vol. xii., 1860; Monograph Scarabus, pl. ii., Sp. 18, fig. 18; in Gassies, Faune Conch. Terrest. et Fluv. de la Novelle Calédoniæ, 1863, p. 56, pl. 3, fig. 7, part 2nd, p. 100, 1869 (1872).

Habitat. Balade, New Caledonia, Pfeiffer. I have specimens of this species from Lifu, Loyalty Islands, from Mr. R. Rossiter, and also specimens from Cardwell, on the North-east Coast of Queensland, a habitat which Mr. Brazier has also corroborated.

33*** PYTHIA OVATA, Pfeiffer.

Pythia ovata, Pfr., in the Proceedings of the Zoological Society of London, 1854, p. 299; Pfr. in Cat. Brit. Mus. Auriculidæ, 1857, p. 67; Pfr., in Mon. Auriculaceorum, 1876, p. 342; H. and A. Adams, Genera Recent Mollusca, Vol. ii., p. 239-240, 1858; Neville, in Enumeratio Heliceorum et Pneumonoporum Insulæ Ceylon adhuc detectorum, 1871, p. 4; Pätel, in Cat. der Conch., 1873, p. 114; Neville, in Hand List of Moll. in Indian Mus. at Calcutta, 1878, p. 222.

Scarabus ovatus, in Reeve, Conc. Icon. Sp. 13, pl. ii., fig. 13, 1860.

Habitat. Ceylon, Pfeiffer in 1854, Balapiti, Ceylon, G. Neville, Arakan, G. Neville, on the authority of Dr. F. Stoliczka. I have several specimens from New Guinea of this species collected by Mr. Goldie.

Mr. G. Neville enumerates a variety of this species in his Catalogue, which he suggests is the *Pythia Lessoni*, Blainville.

34*** PYTHIA PANTHERINA, *A. Adams.*

Scarabus pantherina, A. Adams, in Pro. Zool. Soc., 1850, p. 152, also in Ann. and Mag. Nat. Hist., 2nd Series, viii., p. 70.

Scarabus pyramidatus, Reeve, Kuster Auriculaca, in Martini and Chemnitz, Conch. Cabinet, 1844, p. 62, pl. 9, fig. 3, 4; Mousson, in Dic. Land und Susswasser-Mollusken von Java, 1849, p. 49, pl. 5, fig, 10.

Pythia pantherina, Pfr., in Syn. Auric., No. 92, also Pfr., in Mon. Auric. Viv. 1856, p. 94; Pfr., in Brit. Mus. Cat. Auriculidæ, 1857, p. 71, 72; Pfr. in Mon. Auriculaceorum, 1876, p. 342; Adams, Gen. Rec. Moll., Vol. ii., p. 239-240, 1858.

Var. B.—Chestnut-coloured with pale spots, Pfeiffer.

Scarabus petiverianus, of Ferussac, Reeve in Ann. and Mag. Nat. Hist., Vol. ix. p. 220, pl. 4, fig. 7 ?; also Reeve in Conch. Syst., Vol. ii., pl. 188, fig. 7 ?; Kuster Auriculacea in Martini and Chemnitz, Conch. Cabinet, 1844, Sp. 4, p. 11, pl. 1, fig. 7; A. Adams in Pro. Zool. Soc., 1850, p. 148; also A. Adams, in Ann. and Mag. Nat. Hist., 2nd Series, Vol. viii., p. 67.

Variety V.—Smaller, paler, more slender.

Pythia pantherina, Pätel Catalogue der Conch. 1873, p. 114; also *Pythia savayensis,* Mouss. =*Pythia pantherina,* A. Ad. same page

Scarabus pantherinus, Issel, Molluschi Borneensis, 1874, p. 61.

Variety S.—Pfeiffer, *Scarabus uveana,* Mousson in Journal de Conch., Vol. xiii., p. 177, 1856. Habitat Nueniona, Graffe, Uvea, Pease, in Pro. Zool. Soc., 1871, p. 477.

Habitat. Philippine Islands, Pfr. and Reeve, on the authority of Cuming. Island of Java, Zollingen. Borneo, A. Adams. Celebes, Pfr., in Brit. Mus. Cat. Auric., Nueniona, Pease, in Pro. Zool. Soc., 1871, p. 477.

It is extremely difficult to arrive at the rights of this species described first as *S. pantherina*, in 1850 by Adams, the name is continued by Pfeiffer in his Monographs of 1856-57, and 1876, and under the same name by Adams in 1858. In 1875 Pfeiffer in his Brit. Mus. Cat. Aric., claims Reeve's species *S. pyramidatus* as described and figured by Kuster, as a synonym of this species *pantherina*, in other words, that Kuster has given a figure of Adam's species *pantherina* to represent Reeve's species *pyramidatus* Then Pfeiffer makes out that his variety B. of this species *pantherina* has been figured again by Kuster to represent Ferussac's species *petiverinanus*. I must confess that the two species *petiverianus* Fer., and *pyramidatus*, Reeve, as figured by Kuster and claimed by Pfeiffer as a variety of each other require a great stretch of imagination to believe that they represent one species, especially if the figures of Kuster's are compared with the figures of Reeve of these species.

35** PYTHIA PEROVATA, *Garrett.*

Pythıaperovata, Garrett, in the American Journal of Conchology, Vol. vii., part 4, p. 221, pl. 19, fig. 5, 1871-1872. Pfr., in Monagraphiæ Auriculaceorum, p. 340, 1876. Schmeltz, in Cat. Museum Godeffroy, V., p. 87, 1874.

Habitat. Natawa Bay and Na Viti Levu Bay, Viti Island, Garrett—"Abundant, inhabiting the margins of the Mangrove Swamps."

36* PYTHIA PETIVERIANA, *Ferussac.*

Referred to by Kuster as "*Petiver Gyzophylacii*, Naturæ et artis, 1702 to 1711, pl. 4, fig. 10." I presume figured in that work but not described.

Scarabus petiverianus, Ferussac, Tableaux Systematiques des animaux Mollusques, suives d' un Prodrome &c., 1821, p. 101, N. 3; Zoschel in Weigmanus Archiv. für Nalurgeschichte 1831, i., p. 207; in Reeve's Conc. Icon. Sp. 15, pl. 11, Feb. 15, 1860.

Pythia petiveriana, Pfr., in Zeitschr für Malak., 1853, p. 128, Pfr., Mon. Auric. Viv., 1856, p. 78, also Pfr., in Brit. Mus. Cat. Auriculidæ, 1857, p. 58-59; Pfr., in Mon. Auriculaceorum, 1876, p. 336—An=*P. plicata*, Ferussac?. Pätel, in Catalogue der Conch. 1873, p. 114.

Pfeiffer in 1856 came to the conclusion that this species was not the same as described by Deshayes in Lamarck's Hist. Naturalle sans Vertebres, 2nd Edit., Vol. viii., p. 339, N. 29, as *Auricula petiveriana*, nor that described by Reeve under the same name in the Ann. and Mag. Nat. Hist., Vol. ix., 1842; or in Reeve's Conchologia Systematica, Vol. ii., 1842; he also considered that Kuster was wrong in his representation of this species in the Conchylien-Cabinet, so also was A. Adams, in his opinion, wrong in his definition of this species in his Monograph of the Scarabus published in the Pro. Zool. Soc., Lon., for 1850, p. 147. Reeve on the other hand in Conch. Icon. 1860, considers that Adams' *Scarabus pantherinus* is a synonym only of *petiveriana* and also makes Deshaye's *Auricula petiveriana* as a synonym, and omits *pantherina* altogether from his Monograph. H. and A. Adams again in 1858, did not include *petiveriana* in their list in Gen. Recent Mollusca. The figures by Kuster and by Reeve are certainly very unlike, it would be interesting to know if the original type specimen of Ferrusac has been preserved, and from what specimens the two authors took their figures. Pfr., appears never to have seen the species.

Habitat. Bengal, Petiver in Pfr. Reeve gives as a habitat on the authority of Cuming, the Island of Siguijor, Philippine Islands, in the woods and amongst stones.

37* PYTHIA PLICATA, *Férussac.*

Scarabus plicatus, Férussac, in Tableaux Systematiques des animaux Mollusques suivis d un Prodrome, p. 101, N. 2, 1821; Lesson, Voy. Coquille Zool. Vol. II., p. 335, N. 80, 1830; Troschel, in Weigmann's Archiv. fur Naturgeschichte, Vol. i., 1838; Reeve, in Ann. and Mag. Nat. Hist. Vol. ix., p. 219, pl. 4, fig. 3, also in Conch. Syst. Vol. ii., pl. 188, fig. 3, also in Conch. Icon. Mon. Scarabus, pl. iii., sp. 3, 1860; Kuster, in Martini and Chemnitz Conch. Cabinet, p. 9, pl. i, fig. 3, 4, 1844; A. Adams, in Pro. Zool. Soc. 1850, p. 148, also in Ann. and Mag. Nat. Hist. 2nd series Vol. viii., p. 67; Benson, in Journ. of Asiatic Soc. Bengal, Vol. vi., 1836.

Pythia plicata, Morch. Catalogue Conch. quæ reliquit D'Aguirra et Gadea, comes de Yoldi Fasc. i., 1852. Pfr., in Synopsis Auric. in Malak. Blat., Vol. i., p. 145, 1854, also in Mon. Auric. Viv., p. 76, 1856, also in Brit. Mus. Cat. Auriculidæ p. 57, 58, 1857, also Mon. Auriculaceorum, p. 335, 1876. H. and A. Adams, Gen. Rec. Moll. Vol. ii., p. 239-240, 1858.

Figured in Lisl. Hist. vive Synopsis Method. Conch. p. 577, fig. 32, 1770, also in Klein's Taulamen Methodi Ostracologicæ, pl. 1, fig. 24, 1753; also in Favarme's Troisiéme edition augmentée de la Conchyliologie de D'Argenville, pl. 65, fig. D. 4, 1780.

Helix scarabæus, var., Chem., Conch., ix., 2, p. 182, t. 136, fig. 1251-1252.

Helix Scarabus, var. B., Dillwyn's Descriptive Cat. of Recent Shells arranged according to the Linnean Method, Vol. ii., p. 886, 1817.

Pythia plicata. Pätel, in Cat. der Conch., p. 114, 1873. In G. Neville's Hand List of Mollusca in Indian Museum at Calcutta, part i., p. 222, 1878.

Scarabus plicatus, Morelet, in Series Conch., Vol. ii., p. 270, 1875.

Habitat. First as given by G. Neville, Port Canning on the authority of G. Neville, Wood, Mason, Stoliczka, and Baxter.

Penang, Moulmein and Rangoon, Stoliczka; Akyab, on the authority of Dodgson. Second as given by Pfeiffer—Bangkok, on the authority of Morelet. Bengalia and Pondicherry, on the authority of Deshayes. Jaffna, on the authority of Gardner and A. Adams.

Neville does not corroborate the localities as given by Pfeiffer and it is probable therefrom that they are not correct.

38** PYTHIA POLLEX, *Hinds*.

Scarabus pollex, Hinds, in Annals and Magazine of Natural History, Vol. x., p. 82; also in Zoology of the Voy. of H.M.S. "Sulphur," Mollusca, part iii., p. 60, pl. 16, fig. 9, 10, 1845; A. Adams, in Pro. Zool. Soc., 1850, p. 150, and in Ann. and Mag. Nat. Hist. Vol. viii., 2nd series, p. 69; Reeve, Conch. Icon. Sp. 7, part i., fig. 7.

Pythia pollex, Pfr., in Syn. Auric. n. 82, also in Mon. Auric. Viv. p. 86, 1856, also in Auriculaceorum, p. 341, 1876, and in Pfr., Brit. Mus. Cat. Auriculidæ, p. 65, 1875. H. and A. Adams, Gen. Rec. Mol. Vol. ii., p. 239-240, 1858. Pätel, in Catalog der Conchylien-Sammlung, p. 114, 1873. Mousson, in Journ de Conch., Vol. xviii., p. 133, 1870 (not in index); Schmeltz, in Cat. Mus. Godeffroy, v., p. 87, 1874.

Scarabus zonatus, Homb. et Jacq., Voy. Pôle Sud., Zool. v., p. 41., pl. 10, fig. 18-20.

Habitat. Ovalau, Fiji Islands, Garnett, also G. Neville, in Hand List of Mollusca in Indian Museum at Calcutta on the authority of E. L. Layard, Esq., and on the authority of many other private collectors.

39** PYTHIA PYRAMIDATA, *Reeve*.

Scarabus pyramidatus, Reeve, in Annals and Magazine of Nat. History, Vol. ix., p. 221, pl. 4, fig. 12, (not *Scarabus pyramidatus* of Kuster or Mousson). Reeve, in Conch. Syst., Vol. ii., pl.

188, fig. 12. A. Adams, in Pro. Zool. Soc., p. 149, 1850, also in Ann. and Mag. Nat. Hist. 2nd series, Vol. viii., p. 68.

Pythia pyramidata, Pfr., in Synop. Auric. in Mal., Blat., N. 78, 1854, also in Mon. Auric. Viv., p. 79, 1856, also in Brit. Mus. Cat. Auriculidæ, p. 60, 1857, also in Mon. Auriculaceorum, p. 337, 1876. H. and A. Adams, Gen. Rec. Moll., Vol. ii., p. 239-240, 1858. Pätel, Cat. der Conchylien-Sammlung, p. 114, 1873. Neville, in Hand List of Moll. in Indian Mus. p. 222, 1878.

Habitat. New Ireland, Solomon Islands, Pfr., in Mon. Auriculaceorum 1876, Island of Guam, G. Neville in his Hand List of Mollusca in the Indian Museum at Calcutta on the authority of Pro. W. Newcomb.

Variety *minor*, Pfr., Island of Guam, Pfr., in Mon. Auriculaceorum, p. 337, 1876.

40** PYTHIA REEVEANA, *Pfeiffer.*

Pythia Reeveana, Pfr., in Zeitschrift für Malak., p. 190, 1853; Pfr., in Synop. Auriculaceorum in Mal. Blatter, N. 80, p. 149, 1854; Pfr., in Mon. Auric. Viv., p. 81, 1856; Pfr., in Brit. Mus. Cat. Auriculidæ p. 61, 1857; Pfr. in Mon. Auriculaceorum, p. 340, 1876. Pätel, in Catalogue der Conch.-Sammlung, p. 114, 1873. H. and A. Adams, Genera Rec. Moll. Vol. ii., p. 239, pl. 82, fig. 3.

Scarabus imbrium, A. Adams and Reeve, in the Zoology of the Voyage of H.M.S. "Samarang," Mollusca, p. 56, pl. 14, fig. 13, 1848-1850; A. Adams, in Pro. Zool. Soc., p. 147, 1850, also in Ann. and Mag. Nat. Hist. 2nd Series, Vol. viii., p. 66,

Scarabus Reeveanus, in Reeve's Conch. Icon., Vol. xii., Scarabus 1860, species 6, pl. i., fig. 6. Issel's Molluschi Borneensis, p. 61, 1874.

Pfeiffer considers that Woodward's *Polydonta scarabæus*, mentioned at p. 304 of the edition of 1875 of his Manual of Mollusca, pl. xii., fig. , is a synonym and illustration of this species, the editor of that edition brackets it as being *Scarabus imbrium* of Montford, I presume in his Conchyliologie Systematique, Vol. ii., 1810, p. 307, so that in reality this species has been twice saddled with the name of *imbrium*, first by Adams and Reeve in 1850 as shown above, and again by Woodward. Adams and Reeve's name would not stand good because Montford in his Conchyliologie Systematique, Vol. ii,, p. 307, 1810, had described the well known species *Pythia scarabæus* of Linneus, (*Helix scarabæus*, Linn.) under the name of *imbrium*. Pfeiffer altered the name in 1853.

Habitat. On the authority of Cuming, Pfr., gave the habitat of this species in the Brit. Mus. Cat. as the Philippine Islands, and on the authority of A. Adams, as Celebes and Borneo in 1857. Reeve in his Monogroph in 1860, gives no habitat, although his specimen figured was from Cuming's Collection. I have not seen Issel's work on the Mollusca of Borneo, published in 1874, otherwise he would have settled the point.

The *Scarabus imbrium*, figured and described by Kuster in Martini and Chemnitz Conchylien-Cabinet, Sp. 1, pl. 1, fig. 1, 2, 5, p. 8, 1844, is *Pythia scarabæus* of Linneus.

41* PYTHIA REGULARIS, *Gassies.*

Scarabus regularis, Gassies et Montrouzier, in Journal de Conchyliologie, Vol. xxvii., p. 129, 1879; Gassies, in Faune Conchyliologique de la Nouvelle Calédoniè, by J. B. Gassies, part 3rd, p. 56, pl. iii., fig. 14, 1880.

Habitat. Maré, Lifu, Loyalty Islands, Mr. Richard Rossiter. I have not seen this species.

42*** PYTHIA SAVAIENSIS, *Mousson.*

Pythia savaiensis, Mous., in Journal de Conchyliologie Vol. xvii., p. 345, 1869, also in Journ. de Conch., Vol. xviii., p. 133, 1870; Pfr., in Mon. Auriculaceorum, p. 341, 1876.

Pythia savaiiensis, Pease, in Pro. Zool. Soc., 1871, p. 477.

Pythia Lessoni, Blain.=*Pythia savaiensis*, Mousson, G. Neville, in Hand List of Mollusca in Indian Museum at Calcutta, p. 223, 1878.

Pythia savayensis, Schmeltz, in Catalog. v., of Museum Goddefroy, p. 87, 1874.

Habitat. Savaii, Manua Islands, and Ovalau, Mousson, on the authority of Gräffe; Island of Savaii, Pease, in Pro. Zool. Soc. p. 477, 1871.

Unless considerable care is taken much confusion will take place about this species—if a species it is, which I very much doubt—owing to the name having been altered already twice in its spelling. Originally spelt by Mousson Savaiensis it was altered by Schmeltz in 1874 to Savayensis, and subsequently by Pease in 1877 to Savaiiensis. Pätel it will be observed considers the species only a variety of *pantherina* of Adams, while Neville considers it a variety of *Lessoni* of Blainville.

Neville records his specimens of *Pythia Lessoni*, Blain.=*P. savaiensis*, Mousson, first from Vavan, which should read Vavau, second from Maré Lifu, Loyalty Islands, both on the the authority of Layard; third Savay Ovalau, from Godeffroy.

43** PYTHIA SCARABÆUS, *Linneus.*

Helix scarabæus, Linn.,—a perfect form—Syst. ed. 10, p. 768, N. 571; Mus., Sud. Ulr., p. 663, N. 361, Syst. ed. 12, p. 1241, N. 655; Born., Test. p. 365, 1780; Chemn., Conch., ix., 2, p. 179; Schröt, Einl. ii., p. 122; Gmel., Syst., p. 3613, N. 1; Dillw., Descr. Cat. ii., p. 85, N. 1; Burr., Elem. t. 20, f. 1.?

Helix pythia, Mull., Hist. Vern. ii., p. 88, N. 286.

Pythia helicina, Bolt., Mus., p. 105, N. 1346, ed. Nov. p. 74, N. 1319.

Pythia rictans, Schum. Essai, p. 229.

,, *imbrium*, Mörch., Cat. Yold. p. 37, N. 771.

Pythia scarabæus, Pfr., in Z. of M., 1853, p. 127; also in Syn. Auric.. N. 81, also Mon. Auric. Viv., p. 82; Pfr., Brit. Mus. Cat. p. 62, 1857, also Mon. Auriculaceorum. 1876, p. 340; H. and A. Adams, Gen. Rec. Moll., ii., p. 239, pl. 82, fig. 3a. 1358.

Bulimus scarabæus, Bruguière, in Encye Method., i., p. 340, 1789-1892.

Scarabus imbrium, Mont., Conch. Syst. ii., p. 307, 1810; Ferrussac, Prodr. p. 101, N. 1; Blain., in Dict. Sc. Nat., v., 48, p. 31; Lesson, Voy. Coquille, p. 333, N. 78, pl. 10, fig. 5; Leach, Zool. Misc. i., p. 96, pl. 42; Troschel, in Wiegm Arch , 1838, i., p. 204, t. 4, fig. 1; Küster, in Conch. Cabinet, p. 8, pl. i., fig. 1, 2, 5, 1844; Pot et Mich., Gul. Donai, i., p. 207; Sow., Conch. Man., fig. 299; Reeve, in Ann. and Mag. Nat. Hist., ix., p. 220, pl. 4, fig. 5-8; also Conch. Syst. ii., t. 188, fig. 11, also in Conch. Icon., sp. 5, pl· i., fig. 5, 1860; M. E. Gray, Fig. Moll. Anim., pl. 306, fig. 3.

Scarabus Lessoni, Blain., in Dict. Sc. Nat., v., 48, p. 32; Lesson, Voy. Coquille, ii., p. 334, pl. 10, fig. 4; Oken Isis, 1833, t. 1, fig. 4; Reeve, in Ann. and Mag. Nat. Hist., ix., p. 220, pl. 4, fig. 5, 8, also in Conch. Syst. ii., p. 188, fig. 5, 8; A. Adams, in Pro. Zool. Soc., 1850, p. 147, also in Ann. and Mag. Nat.. Hist. 2nd Series, viii., p. 67.

Auricula scarabæus, Larn., Hist. vi., 2, p. 139, N. ed. 6; Desh. in Larn. Hist. viii., p. 327.

Auricula petiveriana, Desh., in Larn. Hist. ed. nov. viii., p. 339, N. 29.

Polydonta Listeriana, Beck, Index Mol. p. 102, N. 6; Beck, Index Mol. p. 102, N. 8.

Scarabe austral, Chem., Lec. Elém., p. 240, fig. 910-911; Lister, Hist., pl. 577, fig. 31.

B.—Imperfect form with the labrum not expanded.

Pythia pantherina, A. Adams, variety *Pythia savayensis*, Mousson in Pätel's Catalogue der Conch., p. 114, 1873.

Rumph., Amboin. p. 91, t. 27, fig. 1; Guatt, Test., t. 4, fig S; Knorr. Vergnug, vi., t. 19, fig. 2, 3.

Helix scarabæus, Chem, Conch., ix., t. 136, fig. 1249-50-53; Wood, Ind. pl. 32, fig. 1.

Scarabus imbrium, Blain., in Dict. Sc., Nat., Pl. Moll. 54, fig. 5; Kuster, in Martini and Chem. Cab., p. 66, pl. 9, fig. 11, 12, 1844; Guér., Icon. Moll., p. 17, pl. 7, fig. 6.

Polydonta imbrium, Beck, Index Moll., p. 102, N. 7.

Pythia helicina, Mörch., Catal. Yoldi, p. 37, N. 772.

Judging from the above list of references, principally taken from Pfeiffer Brit. Mus. Cat. 1857, this shell has been a severe "bone of contention" amongst the authors who have written about it, but thanks to the able masterhand of the late Dr. Ludovico Pfeiffer this and many other species of shells have been restored to their proper position. In addition to these references I find the following also recorded by Pfeiffer in his work on the Auriculaceæ of 1876.

Pythia scerabæus, Linn., var., in Journal de Conch., Vol. xx., p. 322, 1872=*Pythia rictans*, Shüm., Ess., p. 229, the habitat of which he gives as Naucouri, Pulo Panjang (Rhrdt.) Kar Nicobar (Kirp.) a large umbilicated species=also *Pythia petiveriana*, A. Adams et Reeve differt: testa minore et planiore—and with a closed umbilicus.

Habitat. Naucouri (Rhrdt); Kar Nicobar (Kirp).

Pythia scarabæus, Pätel, Cat. p. 114, 1863.

Habitat. Molluccas, New Ireland and New Hebrides, Pfeiffer.

Pythia scarabæus, Linn., in Neville's Hand List of Moll. in the Indian Museum at Calcutta, p. 221, 1878.

Habitat. Nicobars, on the authority of Dr. F. Stoliczka.

44*** PYTHIA SEMISULCATA, *A, Adams.*

Scarabus semisulcatus, A. Adams, in Proceedings of the Zoological Society of London, 1850, p. 151, also in Ann. and Mag. Nat. Hist. 2 series viii., p. 69. Reeve, Conch. Icon., Vol. xii., Sp. 9, pl. ii., fig. 9, Monograph Scarabus.

Pythia semisulcata, Pfr., Synop. Auric. in Mal. Blat., i., p. 149, 1854, also Mon. Auric. Viv. p. 93, 1856, also in Brit. Mus. Cat. Auriculidæ, p. 70, 1857, also in in Mon. Auriculaceorum, p. 342, 1876. H. and A. Adams, in Gen. Recent Moll., Vol. ii., p. 240, 1858.

45*** PYTHIA SINUOSA, *A. Adams.*

Scarabus sinuosus, A. Adams, in Proceedings of the Zoological Society of London, 1850, p. 151, also in Ann. and Mag. Nat. Hist. 2nd series, Vol. viii., p. 69. Reeve, Conch. Icon. Mon. Scarabus Vol. xii., Sp. 21, pl. iii., fig. 21.

Pythia sinuosa, Pfr., in Synop. Auric. in Mal. Blat., Vol. i., p. 149, 154, also in Mon. Auric. Viv., p. 93, 1756, also in Brit. Mus. Cat. Auriculidæ, p. 70, 1857, also in Mon. Auriculaceorum p. 342, 1876. In H. and A. Adams, Gen. Rec. Moll., Vol. ii., p. 239-240.

Habitat. Isle of Negros, Philippine Islands, Pfeiffer and Reeve on the authority of Cuming,

46*** PYTHIA STRIATA, *Reeve,*

Scarabus striatus, Reeve, in Annals and Magazine of Natural History, Vol. ix., p. 220, pl. 4, fig. 9, 1842, also in Conch. Syst. Vol. ii., pl. 188, fig. 9, 1842, (Vol. iii., p. 109, Kuster), also in Conch. Icon., Vol. xii., Mon. Scarabus, Sp. 26, pl. iii. fig. 26. Kuster in Martini and Chemnitz, Conch. Cabinet, p. 64, pl. 9, fig. 7. A. Adams, in Proc. Zool. Soc., 150, p. 148, also in Ann, and Mag. Nat. Hist. 2nd series, Vol. viii., p. 67, *Pythia striata*, Pfr., Synop. Auric. in Malak. Blat., Vol. i., p. 149, 1854, also in Mon. Auric. Viv., p. 94, 1856, also in Brit. Mus. Cat. Auriculidæ, p. 71, 1857, also in Mon. Auriculaceorum p. 342, 1876. H. and A. Adams, in Gen. Rec. Moll., Vol. ii., p. 239-240, 1858. Pätel, Cat. der Conch. p. 114, 1873.

Pythia striata, Reeve, is made by G. Neville in his Hand List of the Mollusca in the Indian Museum at Calcutta, p. 223, 1878, a variety of *Pythia Lessoni* of Blainville, which again he makes =to *P. savaiensis* of Mousson.

Auricula scarabæus, of Quoy and Gamard, in Voy. Astrolabe, Vol. ii., p. 162. pl. fig. 24, is considered by Pfeiffer as a synonym of this species.

Habitat. San Nicolas Island of Zebu, Philippines is the habitat recorded by Reeve and Pfeiffer, on the authority of Cuming. Pfeiffer gives the Indian Archipelago on the authority of Quoy. Neville gives for his variety *striata*, Reeve, Galathea Bay, Katchall and Teressa on the authority of Dr. Stoliczka and F. A. de Roepstorff Esq. I possess good specimens of this species from the New Hebrides Islands.

Neville has in his collection a variety of this shell he calls (prox. *striata*) from Great Cocos Island and from Borneo Straits, collected by Dr. Stoliczka.

Reeve in his Conchologia Iconica remarks that the example of this species figured by him in pl. iii., fig. 26 is not a characteristic one, and refers to that given in his Conch. Syst. as mentioned as the true original type.

47** Pythia tortuosa, *Mousson.*

Pythia tortuosa, Mousson, in Journal de Conchyliologie, Vol. xix., p. 19-20, pl. iii., fig. 6, 1871. Pätel in Cat. der Conch., p. 114, 1873. Schmeltz, in Cat. v., of Mus. Godeffroy, p. 87, 1874; Pfr., in Mon. Auriculaceorum, p. 339, 1876. Neville, in Hand List of Moll. in Ind. Mus., p. 221, 1878.

Hvbitat. The Islands of Uea, Wallis Island, and Futuna Island, Long. 176° W., Lat. 13½° S.; Pfeiffer on the authority of Gräffe.

48* Pythia trigona, *Troschel.*

Scarabus trigonus, Troschel, in Weigmann's Archives für Naturgeschichte, Vol. i., p. 207, pl. 4, fig. 3, 1838. Reeve, in Ann. and Mag. Nat. Hist., Vol. ix., p. 219, pl. 4, fig. 2, also in Conch. Systematica, Vol. ii., pl. 188, fig. 2, also in Conch. Icon. Vol. xii. Mon. Scarabus, Sp. 22, pl. iii., fig. 22, 1870. Küster, in Martini and Chem., Conch.-Cabintet, p. 10, pl. i., fig. 6, 1844; A. Adams and Reeve, in Zool. Voy. H.M.S. "Samarang," p. 56, pl. 14, fig. 12, Mollusca, p. iii., 1850. A. Adams, in Pro. Zool. Soc., 1850, p 148, also in Ann. and Mag. Nat. Hist. 2nd Series, Vol. viii., p. 67.

Pythia trigona, Mörch., in Catalog. Conch. quæ reliquet D Alphonso D Aquirra et Gadea, comes de Yoldi, p. 37, N. 767, Fas. i., 1852; Pfr., in Synopsis Auric. in Malak. Blätt. i., p. 149, 1854, also in Mon. Auric. Viventium, p. 75-76, 1856, also in Brit. Mus. Cat. Auriculidæ, p. 56, 1857, also in Mon. Auriculaceorum, p. 335, 1876. H. and A. Adams. Gen. Recent Moll., Vol. ii., p. 239-240, 1858. Pätel, Catalogue der Conch., p. 114, 1873; Neville, in Hand List of Moll. in Ind. Mus. at Calcutta, p. 222, 1878.

Scarabus trigonus, Chem., in Manual Conch., Vol. i., p. 476, fig. 3514; Tryon, in Amer. Jour. of Conchology, Vol. v., part ii., p. 111, 1869-70.

Habitat. Putuloz near Bentang, Pfeiffer, on the authority of Troschel; also Borneo on the authority of A. Adams; also Sarsogon, Island of Luzon, Philipines, on the authority of Cuming also Bombay, in Mon. Auric. 1876; Andaman Islands, Indian Archipelago, G. W. Tryon, junr. Neville gives the habitats as Bassein, on the authority of W. T. Blandford, Esq.; Rangoon, Dr. Hungerforde; Trincomalee and Borneo Dr. Stoliczka; Sinkip Island, J. Wood-Mason. Esq.

49 PYTHIA UNDATA, *Lesson.*

Scarabus undatus, Lesson, in Zoologie Voyage de la Coquille, Vol. ii., p. 336, pl. 10, fig. 6, 1830. Reeve, in Ann. and Mag. Nat. Hist. Vol. ix., p. 219, pl. 4, fig. 4, also in Conch. Systematica Vol. ii., pl. 188, fig. 4, 2842, also in Conch. Icon., Vol. xii., Mon. Scarabus, Sp. 17, pl. 11, fig. 17, 1860. Küster, in Martini and Chemnitz, Conch.-Cabinet, p. 65, pl. 9, fig. 8, 9, 1844. A. Adams in Pro. Zool. Soc., 1850, p. 149, also in Ann. and Mag. Nat. Hist. 2nd Series, Vol. viii., p. 68.

Pythia undata, Pfr.. in Mon. Auric. Viventium p. 90, 1856, also in Synop. Auric. in Malak. Blätt., i., p. 149, 1854, also in Brit. Mus. Cat. Auriculidæ, p. 68-69, 1857, also in Mon. Auriculaceorum, p. 343, 1876.

Auricula scarabæus, variety, Desh., in Lam. Hist. Natur. Anim. sans Vert., new edit., Vol. viii., p. 328, 1838.

Polydonta abbreviata, Beck, Index Moll. p. 101, 1837.

Habitat. Waigeau Island, North-west New Guinea, Kuster, 1844.

50** PYTHIA VARIABILIS, *Hombron et Jacquinot.*

Scarabus variabilis, Homb. et Jacq., in Zoologie de Voyage au Pôle Sud., Vol. vi., p. 39, pl. 10, fig. 1—3.

Pythia variabilis, Pfr., in Mon. Auric. Viventium, p. 98, 1856, also in Brit. Mus. Cat. Auriculidæ, p. 74, 1857, also in Mon. Ariculaceorum, p. 343, 1876.

Habitat. Arrow Islands and New Guinea.

51** PYTHIA VERREAUXI, *Pfeiffer.*

Pythia Verreauxi, Pfr., in Malakozoologische Blätter, p. 173, 1856, also in Brit. Mus. Cat. Auriculidæ, p. 63, 1857—as *Pythia Verreauœi*, by mistake—also in Monographiæ Ariculaceorum, p.

336-337, 1876, also in Novitates Conchologicæ, Vol. iii., 356, 1867-69, pl. lxxxiii., fig. 5, 6.

Habitat. Santa Catalina Island, one of the Solomon Group, a comparatively small Island to the south of San Christoval.

It will be found on reference, that Pfeiffer placed this species (which is imperforate) in the Brit. Mus. Catalogue in his third group which have the umbilicus openly perforated or umbilicated; this mistake is rectified by him in his Monograph of 1876.

I have a large number of specimens of this pie-bald species from Santa Catalina some of which are absolutely imperforate, while others are openly umbilicated some have a light coloured peristome, others are blackish with every intermediate shade, the upper half varies from olive-brown to blackish-chestnut; all have "distinct arcuate" or "deep arched striæ" near the suture besides many other diagnostic characters resembling *verreauxi* in one specimen and *castanea* in another, so much so, that I have no hesitation in stating that I believe the two last named species are one and the same, possibly having slight local variations, but nothing to justify their being made distinct species. The only doubt in my mind is whether they are not both only one of the many varieties of *Pythia scarabæus.*

52** PYTHIA WALLACEI, *Pfeiffer.*

Pythia Wallacei, Pfr., in Pro. Zool. Society of London, 1861. p- 28, pl. 2, fig. 2, also in Monographiæ Auriculaceorum, p. 338, 1876.

Habitat. Island of Batchian, Pfeiffer, on the authority of Wallace.

ON THE PRACTICE OF OVARIOTOMY BY THE NATIVES OF THE HERBERT RIVER, QUEENSLAND.*

BY N. DE MIKLOUHO-MACLAY.

While in Queensland last November, I visited Dalby and met there Mr. Rotsch, who was recommended to me as a man of remarkable personal acquaintance with the country and people of Western Queensland. Mr. Rotsch told me, inter alia, that on his way from the Diamantina to the Herbert River, (about 23° Lat. and 139° Long.), he met with a man who had been staying some time with the Natives living a little up the stream of the Herbert River in the vicinity of the Parrapitshuri Lake.

This man told Mr. Rotsch, that he had noticed amongst these natives, who mostly had indured the "Mikæ" operation, † a peculiar looking girl who appeared to avoid the society of other females and remained always with young men, sharing with them their occupation and toils. This girl was almost destitute of breasts, was very slim limbed, had some hair on the chin, and altogether had a kind of "boyish" appearance.‡

Though this girl appeared to shun other females, she never showed a particular inclination for the young men to whose sexual use she was given.

Two long cicatrices on the groins of the girl were explained by a native, who had been some time on a Station and could speak a little English—"all same~~,~~—spayed cow," and added that this operation is sometimes performed to give the young men of the tribe a female companion, without the risk that such a kind of "Hetaira" will ever become a mother.* The man explained, by gestures, that after the incisions in the groins are made, the ovaria are torn out.

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*I have seen some time ago a paper on the same subject in the Anthropological Society of Berlin, which was 'published in the proceedings of the same.

†Vide my letter to Prof. R. Virchow, about the Mikæ operation: Verhandlungen der Berliner Gesellschaft für Anthropologie Ethnologie und Urgeschichtie Sitsung vov 17 April, 1180.

‡In the well known case of Pott, the woman (of 23 years of age) after the operation (ovariotomia) had been performed, never menstruated, her breasts fell away and the muscular system became developed as in a man. (Rob. Barnes, "A Clinical History of the Medical and Surgical Diseases of Women 1878, page 184."

This tale appeared to me especially interesting, as it was a confirmation of another similar account, I remember, in 1878 to have heard from Mr. E. P. Ramsay, that Mr. J. Macgillivray, the well known naturalist of the "Rattlesnake," had told him about a native woman whom he saw at Cape York, on which the same operation (Ovariotomy) had been performed. Mr. Macgillivray saw himself the woman and convinced himself of the existence of two cicatrices in the groins. The woman was born dumb, and the operation of Ovariotimy was performed to prevent her having dumb-born children.

Although it is strange that the Australian Natives should undertake such dangerous operations, it seems however to me, to be a fact. My reasons for this opinion are:—1. The authenticity of the relaters (Macgillivray and Rotsch). 2. The circumstance that Ovariotomy scarcely can be regarded as an operation more dangerous or complicated† than that of "Mikæ" which has, as known, such a large spread in Australia. 3. The fact that dark races, as a rule, stand dangerous wounds or operations better than the white. 4. That this operation (Ovariotomy) is known to be performed by nations having very little knowledge of Anatomy.* 5. That similar operations on native women have been reported lately from other places of Australia.†

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*Mr. Bracker of Waroo Station, near Stanthorpe, mentioned to me, that amongst the blacks of that part of Queensland, sterile women were regarded as belonging to every man, as naturally fitted to be prostitutes.

†After *Th. Billroth*, (Handbuch der Frauenkrankheiten, 1877, page 215 and 228) the percentage of recoveries after the Ovariotomia is 90,5°/₀.

REMARKS ABOUT THE CIRCUMVOLUTIONS OF THE CEREBRUM OF CANIS DINGO.

By N. DE MIKLOUHO-MACLAY.

[Plate V.]

Without going into a detailed description of the *gyri* and *sulci* of the brain of the Dingo, a glance of the same (fig. 1.) and even a superficial comparison with the circumvolutions of another dog (fig. 4), proves, that the gyri of the former are more numerous and complicated than that of the later. It is true that on the plate are figured the Brains of two very extreme representatives of the species *Canis*. The one is that of the Dingo, the wild dog of Australia, the other the dog of New Guinea (from the Maclay Coast). The mode of life of both helps to explain the differences of their brains.

The dingo depends upon his skill to provide himself with sufficient food by hunting, which requires often the full use of his intellect. Many of the gentlemen present here know far more than myself about the intelligence and cunning of the dingo; therefore, having no experience of my own to add about this subject, I will say a few words about the Papuan dog.

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*Dr. Roberts in his travel from Delhi to Bombay (I found it mentioned in Müller's Archiv., 1878.) speaks about a female eunuch, who had the ovaria cut out; she had no breast, very little adipose tissue on the *Mons veneris* which was hairless, the backside was manlike, she had no menstruation, and no sexual inclination.

†I know from Mr. H. Gilliat, that Mr. Suttor has told him of having seen women similarly operated on, among the blacks on the Herbert and Mulligan Rivers, and that another gentleman had assured him of the same fact. I have heard from Mr. Dufaur, that he had noticed in the diary of Hume, a reference to a similar practice among the blacks.

The *Canis papuensis* is very different in appearance and character from the *Canis dingo;* is generally smaller, has not the bushy tail of the dingo, is very timid, and howls instead of barking. The New Guinea dog is used as food by the Natives of the Maclay Coast; his flesh however, when baked or boiled is dark and dry, and is generally regarded by the natives as inferior to that of the pig. Although he is sometimes fed by his master and gets with the pigs, all the remnants of the meals, he is often to be seen on reefs at low water, feeding on crabs and small fishes, etc.

During the night, the dog in company with the pig takes over the business of the "Nightman" and the "scavenger" of the Papuan villages. Everything that appears edible to their taste and is not put out of their reach, including the human excrements which abound in the early part of the morning in the closest vicinity of the house, is devoured by them.

In only a very few instances have I seen the natives of the Maclay Coast using their dogs to assist them in their hunting the wild pig, the dorcopsis and the cassowary; the *Canis papuensis,* I think is not only too timid, but too lazy and too stupid an animal for such an occupation.

I am sorry that I left in Singapore, among my papers, some drawings and photos of circumvolutions of brains of dogs of different breeds. The comparison of the same with the gyri of the Dingo would show that although the circumvolutions of the brains of the Dingo do not differ greatly from those of the brains of some of them, they are superior in number and complication of many of them.

EXPLANATION OF PLATE V.

Fig. 1.—Brain of *Canis dingo*, Shaw, from a young specimen, from Guluarber Station, on the Balonne River, Queensland; seen from above.

" 2. }
" 3. } The same from the sides.

Fig. 4.—Brain of *Canis papuensis*, from the Village Bonga, Maclay Coast, New Guinea; seen from above.

" 5.
" 6. } The same from the sides.

NOTES AND EXHIBITS.

Baron Maclay exhibited Photographs and Drawings of the brain of *Canis dingo*.

Mr. Ramsay exhibited a new species of snake-like Lizard of the genus *Lygopus* from Nicol Bay.

Mr. Brazier exhibited a specimen of *Bulimus Rossiteri*.

Mr. Pedley exhibited an embryo of a *Hippocampus*, taken from the pouch of the male.

Dr. Cox exhibited a fine series of *Pythia* illustrating his paper.

Mr. Palmer exhibited an aboriginal skull from Broadsound, Queensland.

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WEDNESDAY, JULY 27TH, 1881.

The President, Dr. J. C. Cox, F.L.S., in the Chair.

DONATIONS.

The Fern World of Australia by F. M. Bailey, F.L.S., &c.

The Third Annual Report of the Campbelltown Botanical Society; by the Society.

The Southern Science Record for June 1881.

Journal of the Royal Microscopical Society, Vol. I., part 2, by the Society.

Bulletin of the Museum of Comparative Zoology, Harvard College, Mass., Vol. VIII., pp. 95-284.

Journal of the Royal Society of New South Wales, Vol. XIV., by the Society.

Tables des comptes rendus des seances d'Academie des Sciences Paris, by the Society.

Die Bevolkerung der Erbe, by Free Public Library Sydney.

Louis Agassiz's Monograph of the Echinoderms, by Percival Pedley, Esq.,

Zoology of the Voyage of the Coquille, with atlas of plates, four volumes; Grey's Handlist of Birds, three volumes; Huxley's Elements of Comparative Anatomy, one volume; Macleay's Catalogue of Australian Fishes, two volumes; Transactions Ent. Soc. of New South Wales, two volumes; by the Honble. William Macleay, F.L.S., &c.

PAPERS READ.

CRANIAL DEFORMATION OF NEW-BORN CHILDREN AT THE ISLAND MABIAK, AND OTHER ISLANDS OF TORRES STRAITS, AND OF WOMEN OF THE S.E. PENINSULA OF NEW GUINEA.

BY N. DE MIKLOUHO-MACLAY.

In April, 1880, visiting the islands of Torres Straits, I had the opportunity of seeing, at Mabiak, an interesting operation performed on the heads of new-born children. During the first weeks after the birth of the child the mothers are accustomed to spend many hours of the day compressing the heads of their infants in a certain direction, with the object of giving them a quite conical shape. I have seen it performed daily and on many children, and have convinced myself that the deformation, which is perceivable in the adults, is the result of this *manual* deformation only. This observation was specially interesting to me, remembering having read, many years before, the opinion of the celebrated biologist and anthropologist, K. E. de Baer, member of the Imperial Academy of Sciences of St. Petersburg, who would not believe that a manual pressure could have such an effect on the skull. [*Vide* K. E. de Baer, Ueber Papuas and Alfuren, 'Memoires de l'Acad. Imp. des Sciences de St. Petersbourg,' 6 serie, t. viii. 1859, page 331.] K. E. de Baer expresses this opinion, analysing the information given by J. Macgillivray [Narrative of the Voyage of H.M.S. Rattlesnake; London 1852, vol. l. page 189], he thinks that the observations of Macgillivray, who has seen the same above-mentioned manual deformation performed on children at Cape York, are not exact enough. Remembering this contradiction, I was careful to decide the contested point, and now, after careful examination, measurements, and inquiries, I believe the question may be regarded as settled, and that the information given by Macgillivray about the head deformation at Cape York was not too hasty, and was correct. As far as I know, it will be the only well authenticated example of cranial deformation by means of *manual* pressure.

The deforming of heads at Mabiak is an instance of an intentional deformation, made for the sake of a singular idea of beauty; but in the village Bara-Bara, on the east end of New Guinea. and in other villages on the South Coast of this Island, I had a chance of observing numerous cases of not intentional distortion of heads of adult females, in consequence of an established practice. The females in those parts of New Guinea are accustomed to carry heavy burdens in large bags, the band of which serves as a handle and rests across the head, a little behind the *sutura coronalis*. As very young girls have to begin to assist their mothers in the household, this mode of carrying the heavy bags has resulted in forming a transversal and saddle-shaped depression of the head corresponding to the anterior parts of the *Ossa parietalia*. I have inspected a few hundred heads of females* for the purpose of measuring the index of cranial breadth, amongst which I found many dozens of the well-marked above-mentioned transversal depressions. Many elderly females had the greater part of the depression quite strongly marked, and I found that in some cases the depression was not less than from 3 to 4 millemetres. I possess a skull from one of these villages of the south coast of New Guinea, on which the above-described saddle-ridge is well marked, and I believe this acquired cranial deformation has a great chance of being more or less transmitted from generation to generation by inheritance, and is therefore still more worthy of record. A more complete account of these cases of cranial deformation, with measurements and illustraticns, will be found in my letter to Professor R. Virchow, of Berlin. [*Vide* Sitgungsberichte der Berliner Gesellschaft für Anthropologie Ethnologie und Urgeschichte, 1881.]

DESCRIPTIONS OF AUSTRALIAN MICRO-LEPIDOPTERA.

BY E. MEYRICK, B.A.

VI. TORTRICINA. (Continued)

The present instalment concludes the *Tortricina,* so far as they are at present known. It treats of the two remaining families, the *Grapholithidæ* and the *Conchylidæ,* as defined in the preceding paper (No. V.). These families are far less prominent in the Australian region than they are in the Northern hemisphere, and especially in Europe; their main groups are indeed wholly absent and the representatives of the families consist chiefly of specially developed groups, with scattered outliers of some northern types. Descriptions are here given of 55 species, of which 45 are new to science.

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* Married females in many parts of New Guinea have the habit of shaving their hair, and present, therefore, for a biologist a more suitable object for cranial measurement than the men with their large frizzled wigs.

The *Grapholithidæ* are represented by 49 species, less than half the *Tortricidæ*, of which in Europe they are very considerably more than double. Even of this number 4 are species introduced from Europe and now fully naturalised; of the remaining 45 species 2 are common to Australia and New Zealand, 2 are endemic to New Zealand, and the remainder are endemic to Australia. The character of this fauna is strikingly peculiar and of great interest, but before discussing its nature, it will be necessary to make some remarks upon the internal classification of the family.

In my view the *Grapholithidæ*, as at present known, are divisible into six equivalent groups of genera, by the following characters; these groups are mostly natural subdivisions, and the characters defined will be found to hold almost universally, though it is not denied that exceptions may occur within the limits of the group.

A. (*Penthina* group.) thorax crested; antennæ entire; veins 7 and 8 of forewings separate (rarely stalked); veins 3 and 4 of hindwings from a point (rarely stalked).

B. *Eudemis* group.) thorax slightly crested; antennæ entire; veins 7 and 8 of forewings separate; veins 3 and 4 of hindwings remote at origin.

C. (*Pædisca* group.) thorax smooth; antennæ entire; veins 7 and 8 of forewings separate; veins 3 and 4 of hindwings from a point.

D. (*Grapholitha* group.) thorax smooth; antennæ entire; veins 7 and 8 of forewings separate; veins 3 and 4 of hindwings stalked.

E. (*Palæobia* group.) thorax smooth; antennæ entire; veins 7 and 8 of forewings stalked; veins 3 and 4 of hindwings stalked.

F. (*Strepsiceros* group.) thorax smooth; antennæ of male with a deep notch; veins 7 and 8 of forewings separate; veins 3 and 4 of hindwings stalked.

Comparing the relative proportions of these groups in Australia, New Zealand, and Europe, and adding the proportion of *Tortricidæ* as a standard of comparison, we have the following results; and although the actual number of species indicated from this region will doubtless be largely increased, there is no reason to suppose that the proportions will be materially changed.

		Europe.	Australia.	New Zealand.
Tortricidæ		151	79	24
Grapholithidæ	Group A.	87	9	1
	„ B.	13	0	0
	„ C.	70	0	0
	„ D.	230	6	0
	„ E.	1	14	0
	„ F.	1	14	3

Here we have two-thirds of the Australian species corresponding to two species in Europe, whilst the remaining third corresponds to four hundred species; whilst in New Zealand the family is hardly present at all. In the only other region of which the *Tortricina* are at all known, North America, the relative proportions of the various groups are much the same as in Europe, and groups E. and F. are not known to be represented at all.

The indigenous Australian species of *Grapholithidæ* are referable to eleven genera, of which three, containing nine species, occur also in Europe and North America; the other eight, with thirty-four species, are new and endemic, one only extending to New Zealand. The two peculiar New Zealand species belong to two endemic genera, one of which is very abnormal, the other nearly allied to Australian genera. The four introduced European species belong to four other genera, which are not otherwise represented in the region; there can be no doubt that they came over with their food-plants, but all are now well established and of common occurrence, and two at least are found in New Zealand as well as in Australia. It may be remarked that one of them, *Crocidosema plebeiana*, seems to be already much more plentiful here than at home; indeed, if it were not so marked an European type, it might be argued that it was really introduced from Australia into Europe, but it is not probable that this was the case.

The principal feature of the family is the development of the nearly-allied groups of *Palæobia* and *Strepsiceros*, which are apparently almost confined to the Australian region. The two European species of these groups are very similar in facies to the Australian, but generically distinct. The peculiar larval habit of at least one species of *Palæobia*, which mines blotches beneath the cuticle of leaves, in the same manner as many of the smaller *Tineina*, is unprecedented in the *Tortricina*. Two species of *Strepsiceros*, which occur in both Australia and New Zealand, are the only *Tortricina* which appear to be indigenous to both countries; and under those circumstances it becomes a question of importance whether they are really indigenous to both, that is to say, whether their occurrence in one or other is not due intermediately to human agencies. Of the two species in question, *S. ejectana* is an excessively abundant species in various parts of Australia, and is known to feed on several common Australian shrubs; in New Zealand it seems to occur more sparingly, and the specimens I took were decidedly dwarfed; it does not seem at all improbable that it may have been accidentally transported with some one of its foodplants from Australia to New Zealand, and subsequently have maintained itself on allied plants. *S. zopherana*, on the other hand, occurred to me in great abundance in New Zealand, and I have only met with occasional individuals round Sydney; it is not inconceivable that in this case the previous process may have been reversed, but further evidence is required. If however these species are really indigenous to New Zealand, I am surprised that peculiar species of the genus have not occurred there; though it is true that we have there the nearly allied but peculiar genus *Hendecasticha*. In view of the otherwise complete specific difference between the *Tortricina* of Australia and New Zealand, the matter is deserving of a full investigation.

The little genus *Stigmonota* is also worthy of notice, as being, with the exception of the abnormal and doubtful genus *Epitymbia* the sole representative of the large *Grapholitha* group. Its presence probably indicates the antiquity of the genus; the species are very similar in facies to the European.

Of the *Conchylidæ* there are five Australian and one New Zealand species, all endemic, distributed amongst four endemic genera, the New Zealand species being congeneric with an Australian one. These appear to form two groups, both of which are very distinct from anything yet known to occur in other parts of the world, and are characterised by the structure of the hindwings. These in all other known genera of the family contain eight veins, of which 3 and 4 are stalked or from a point; but in one Australian type, represented by the genus *Heliocosma*, these veins 3 and 4 are widely remote at origin and parallel, whilst in the other type, of which the other three genera are examples, there are only six veins in the hindwings altogether. The curious bladder-like swelling of the forewings in *Coscinoptycha*, and the spherical radiating tuft of hairs on the hindwings of *Oistophora*, are abnormal and remarkable characters to which no analogy is found elsewhere. The facies of *Heliocosma* is that of the normal European type, but the species of the other group are eccentric and peculiar in appearance, and indeed are hardly recognisable superficially as belonging to the *Tortricina*. The origin of the whole of the Australian forms may probably be referred to some single ancestor of extinct type, finding its way hither at a very remote period, perhaps intermediate in structure between *Heliocosma* and *Paramorpha*, which have many points of resemblance. The habit of the only larva of this family which I have yet met with is also very extraordinary, for it constructs for itself a portable case of the fragments of the flowers on which it feeds, exactly after the fashion of some of the smaller *Tineina*, such as *Coleophora*.

If the general remarks on the three families of *Tortricina* are compared, it will be seen that the evidence of all points in the same direction. All alike show indications of long isolation and great specialisation, and are distinguished by the disproportionate development of peculiar endemic groups. We have at present too little knowledge of other extra-European regions to be able to understand precisely the bearing of individual peculiarities, but the main lines of difference are clearly defined and instructive, and it may be anticipated that, when the fauna of the Malayan region is made known, we shall be in a position to furnish valuable evidence on the process of immigration of the Australian *Micro-Lepidoptera*.

It may be mentioned that according to the number of species at present known, the proportion of *Tortricina* to *Tineina* is in the European region 35 per cent., and in the Australasian only 16 per cent., or less than half the European.

Fam. II. GRAPHOLITHIDÆ.

Lower median vein of hindwings pectinated with long hairs above towards base; vein 2 of forewings rising from before posterior third of lower margin of cell.

The Australian and New Zealand species of the family described hereafter are referred to seventeen genera, which may be analytically separated as follows:

I. Forewings with 12 veins.
  A. Veins 7 and 8 of forewings stalked.
    1. Veins 3 and 4 of hindwings from a point 1. Phricanthes.
    2. Veins 3 and 4 of hindwings stalked.
      a. Hindwings with a membranous discal ridge near base .. .. ..11. Epitymbia.
      b. Hindwings smooth.

i. Costa in male with basal fold ..14. Holocola.
ii. Costa in male simple .. ..13. Palæobia.
B. Veins 7 and 8 of forewings separate.
1. Veins 3 and 4 of hindwings from a point.
a. Vein 7 of hindwing rising from cell much before upper angle .. .. 5. Scolioplecta.
b. Vein 7 of hindwing rising from upper angle of cell.
i. Thorax smooth .. .. .. 8. Aphelia.
ii. Thorax crested.
* Thorax with three crests; apex of forewings falcate .. .. 6. Epalxiphora.
** Thorax simply crested; apex of forewings rounded.
† Palpi porrected .. .. 4. Penthina.
†† Palpi ascending, appressed to face .. .. .. 3. Antithesia.
2. Veins 3 and 4 of hindwings stalked.
a. Costa in male with basal fold.
i. Antennæ of male notched above basal joint.
* Veins 6 and 7 of hindwings stalked 15. Bathrotoma.
** Veins 6 and 7 of hindwings separate .. .. ..16. Strepsiceros.
ii. Antennæ of male simple .. ..12. Crocidosema.
b. Costa in male simple.
i. Hindwings in male with discal groove and ridge near base ..10. Carpocapsa.
ii. Hindwings in male smooth.
* Thorax crested .. .. .. 2. Helictophanes
** Thorax smooth .. .. .. 9. Stigmonota.
3. Veins 3 and 4 of hindwings separate at origin .. .. 7. Eudemis.
II. Forewings with 11 veins .. .. ..17. Hendecasticha

1. PHRICANTHES, *n. g.*

Thorax with a moderate erect crest. Antennæ in male thickened, shortly ciliated. Palpi rather short, porrected, second joint densely rough-haired beneath and at apex above, terminal joint exposed. Posterior tibiæ fringed with short hairs above. Forewings moderately broad, costa in male simple, arched, hindmargin slightly sinuate beneath apex; surface with raised scales. Hindwings strongly rounded, broader than forewings. Forewings with veins 7 and 8 stalked, vein 7 running to costa, secondary cell indicated, vein 1 simple at base. Hindwings with veins 3 and 4 rising from a point, 5 approximated to 4 at base, 6 and 7 separate, diverging.

Belonging to the group of *Penthina*, and very similar in facies to *Helictophanes*, but distinguished by the peculiar and abnormal neuration of forewings, in which veins 7 and 8 are stalked and both run to costa before apex, and vein 1 is not furcate at base; the neuration of hindwings is normal.

The only species is of moderate size, and rather conspicuously marked.

1. Phric. asperana, *n. sp.*

♂ ♀. 6½‴-8‴. Head white, mixed above with dark fuscous, forehead with a small blackish spot. Palpi white, second joint black at base and with two interrupted black rings externally. Antennæ dark ochreous-grey, with slender blackish annulations. Thorax dark fuscous mixed with black, and on shoulders with whitish. Abdomen light brownish-ochreous. Anterior tibiæ black with two white rings, tarsi black with base and two rings slenderly white; middle tibiæ white with three narrow black rings, tarsi white with apex, a broad band near base, and two slender rings black; posterior tibiæ whitish-ochreous minutely speckled with black, tarsi whitish-ochreous with slender blackish rings at base of joints. Forewings moderate, apex very obtuse, dorsal half with numerous spots of roughened scales; white, costa and inner margin strongly strigulated with blackish, alternate spots larger, last four costal spots broader and close together; a dark grey blotch, mixed with ochreous and transversely strigulated with black, extending along inner margin from base to two-thirds, and reaching two-thirds across wing, rather ill-defined, rounded posteriorly; a slender ferruginous transverse streak from costa at one-fourth, reaching half across wing, blackish on costa; a small grey irregularly triangular spot on disc at two-thirds; a rather broad grey streak, coarsely mixed with black, from costa at three-fourths to anal angle, posteriorly rather undefined, anterior edge closely preceded by a slender irregular grey line; some small irregular black streaks on hindmargin, connected together by a slender ferruginous streak close to hindmargin, extending to above apex; cilia grey, mixed with dark grey, towards anal angle whitish. Hindwings smoky brownish-ochreous; cilia pale ochreous, with a dark ochreous-grey line near base, extremities dark fuscous round apex.

Superficially somewhat similar to *Helictophanes tricolorana*, but differing by the ferruginous marks on forewings, and the smoky brownish-ochreous hindwings, besides other details.

Generally taken at rest on the trunks of *Eucalyptus;* tolerably common on the sandy coast near Sydney, in thin scrub, and occurs also at Waratah on the Hunter River, in October, December, and January.

2. HELICTOPHANES, *n. g.*

Thorax with a moderate erect crest. Antennæ in male moderately ciliated. Palpi moderate, porrected, second joint roughly haired beneath and at apex above, terminal joint exposed. Posterior tibiæ fringed with hairs above. Forewings moderately broad, costa slightly arched, in male simple, hindmargin rounded or slightly sinuate. Hindwings rounded-elongate, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to costa (? or hindmargin), secondary cell distinct, vein 1 furcate at base. Hindwings with veins 3 and 4 stalked, 5 approximated to 4 at base, 6 and 7 stalked.

Allied to *Penthina*, but distinguished from all other genera of the group by the stalking of veins 3 and 4 of hindwings; the stalking of veins 6 and 7 of hindwings, and the termination of vein 7 of forewings on the costa, are also noticeable characters.

I have only been able to thoroughly examine the neuration of *H. uberana;* but the other two species appear to agree in all essential points, as well as they can be made out, and especially in the stalking of veins 3 and 4 of hindwings, which is distinct.

The three species may be separated as follows:

a. Forewings white and black; hindwings yellow . . 1. *tricolorana.*
b. Forewings ochreous-brown; hindwings dark-grey 2. *uberana.*
c. Forewings light ochreous; hindwings pale brownish-ochreous . . . . 3. *fungiferana.*

1. Helict. tricolorana, *n. sp.*

♂. 7″. Head, palpi, and thorax dark fuscous mixed with whitish, second joint of palpi with an ochreous spot on outer side. Antennæ brownish-ochreous. Abdomen dark fuscous, tinged with ochreous. Legs blackish-fuscous, tibiæ and tarsi with slender whitish rings. Forewings moderate, costa gently arched, apex obtusely rectangular, hindmargin hardly oblique; white, costa and inner margin very shortly strigulated with black; basal patch blackish, mixed with dark grey and whitish, its outer edge extending from one-third of costa to one-third of inner margin, irregular, slightly angulated in middle; a dark fuscous-grey ill-defined blotch extending along inner margin from basal patch to three-fourths, reaching half across wing, somewhat rounded posteriorly; two or three small black marks immediately beyond its posterior edge; a small black triangular spot at apex of wing, slenderly produced along hindmargin, and containing two oblique white streaks before apex; from its anterior angle proceeds a slender blackish sinuate line at first inwards, then curved outwards to anal angle; a dark fuscous-grey cloudy streak parallel and close to lower half of hindmargin: cilia whitish with two black lines (?). Hindwings deep yellow, apex and hindmargin broadly suffused with dark fuscous; cilia grey-yellowish, with a dark fuscous line near base.

A distinct and handsome species, superficially separable from *Phric. asperana* by the yellow hindwings, and the entire basal patch, black apical spot, and absence of ferruginous markings on forewings.

One specimen, taken at Sydney in October.

2. Helict. uberana, *n. sp.*

♂ ♀. 6½″-7½″. Head, palpi, thorax, and antennæ ochreous-brown, sometimes mixed with dark fuscous. Abdomen dark fuscous. Legs grey-whitish, anterior tarsi black with base and two narrow median rings whitish, anterior and middle tibiæ, and middle and posterior tarsi banded with dark fuscous. Forewings moderate, costa bent before apex, apex obtusely rounded; ochreous-brown, more or less irrorated and suffused with dark fuscous; costa with slender oblique whitish strigulæ, the interspaces between which are black; a small subquadrate black spot on costa at one-fourth, and a blackish ill-defined spot on disc at one-third, indistinctly connected; a small subquadrate black spot on costa in middle; some indistinct dark fuscous transverse strigulæ towards anal angle and hindmargin: cilia ochreous-brown or dark fuscous. Hindwings dark fuscous-grey; cilia fuscous-grey, with a dark suffused line near base.

Var. Forewings with a large round ochreous-yellow blotch in disc above middle at two-thirds from base.

Recognisable by the rich ochreous-brown colour, and peculiarly rounded apex of forewings; the variety characterised is curious, but appears to belong to this species without doubt.

Seven specimens of the type, and one of the variety, taken at rest on fences round Sydney, in October and December; in repose the tips of the forewings are peculiarly bent in beneath the extremity of the abdomen, causing an appearance of deformity.

3. Helict. fungiferana, *n. sp.*

♂. 6½‴. Head and thorax pale ochreous, mixed with whitish, centre of thorax with a large square blackish spot. Palpi blackish. Antennæ brownish-ochreous. Abdomen brownish-ochreous, segments suffused with dark grey towards base. Legs whitish-ochreous, anterior and middle tibiæ and all tarsi banded with blackish. Forewings moderate, costa gently arched, apex rectangular, hindmargin rather bowed outwards below middle; light ochreous, with two clusters of tufts of raised scales towards inner margin, the first about one-fourth, the second in middle, and some scattered tufts above anal angle; some irregular blackish scales along inner margin towards base; a large dark grey triangular costal blotch, mixed with black, extending on costa from one-fourth nearly to apex, anteriorly attenuated, its apex reaching two-thirds across wing a little before anal angle, indistinctly connected with hindmargin before anal angle by two or three dark grey and blackish scales: cilia light brownish-ochreous. Hindwings pale brownish-ochreous, transparent at base, hindmargin suffused with dark fuscous-grey; cilia pale brownish-ochreous, with a darker line near base.

Somewhat resembling *Penth. helioana* in colour and type of marking, but characterised by the tufts of raised scales towards inner margin, and the much larger costal blotch.

One specimen taken in scrub near Parramatta, New South Wales, in September.

3. ANTITHESIA, Gn.

Thorax with a strong erect crest. Antennæ in male thickened, ciliated. Palpi rather short, ascending, closely appressed to face, second joint shortly rough-haired beneath, terminal joint short, distinct. Posterior tibiæ fringed with hairs above. Forewings moderately broad, costa gently arched, in male simple, hindmargin rounded. Hindwings rounded-elongate, broader than forewings. Forewings with veins 7 and 8 separate, vein 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 rising from a point, 5 approximated to 4 at base, 6 and 7 separate, diverging.

Larva sixteen-legged, feeding in rolled leaves.

The genus only differs from *Penthina* in the form of the palpi, which are bent upwards and appressed to the face; but unless the two genera can be connected by indefinable gradations, this appears to me a sufficient point of distinction.

I have two Australian species; the genus is scantily represented in Europe.

1. Ant. phyllanthana, *n. sp.*

♂ ♀. 6½‴-7½‴. Head and palpi dark fuscous mixed with whitish-grey. Antennæ dark ochreous-fuscous. Thorax in male whitish-ochreous or pale ochreous mixed with dark fuscous, in female almost wholly dark fuscous. Abdomen ochreous-grey, anal tuft of male whitish-ochreous. Legs whitish-ochreous, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings moderate, costa gently arched, apex obtuse, hindmargin somewhat oblique; light reddish-fuscous, somewhat suffused with whitish, in female more or less wholly suffused with dark fuscous-grey; basal patch blackish-grey, irregularly suffused with white and light reddish towards base, outer edge extending from costa at one-third to inner margin before middle, somewhat concave below middle; central fascia blackish, on lower half mixed or suffused with light reddish, moderately broad, anterior edge well-defined, extending from just before middle of costa to just beyond middle of inner margin, separated on costa from basal patch by a subquadrate white spot; costa between central fascia and apex suffused with blackish, with five pairs of oblique whitish strigulæ; beyond central fascia the disc is wholly suffused with dark grey, except an ovate reddish-white patch on anal angle, emitting a curved whitish line from its anterior end reaching half across wing, and two sinuate whitish lines close together from its apical end, meeting and terminating a little below apex; sometimes a reddish-white mark on hindmargin below apex; in female these markings are often almost obliterated in the dark fuscous-grey suffusion: cilia light reddish-fuscous, beneath anal angle whitish, in female sometimes wholly whitish or wholly blackish-fuscous. Hindwings fuscous-grey, hindmarginal edge darker; cilia whitish-grey, with a dark grey line near base.

A variable insect, ranging from light reddish-fuscous to dark grey, but generally showing a small clear white spot on costa before middle, and a whitish patch on anal angle; some forms recall the European *Penth. profundana*, F.

Larva dull green, but undescribed; feeding in rolled-up leaves of *Phyllanthus Ferdinandi*, (a small tree belonging to the *Euphorbiaceæ)* in December.

Rather common on fences in Sydney, where the food-plant is only grown in gardens, being a native of Queensland; occurs in January and February.

2. Ant. sphærocosmana, *n. sp.*

♂. 8½‴. Head, palpi, antennæ, and thorax ochreous, face and outer side of palpi mixed with blackish, basal joint of antennæ blackish. Abdomen grey, anal tuft whitish-ochreous. Anterior and middle legs whitish-ochreous, broadly banded with dark fuscous; posterior legs whitish. Forewings strongly dilated posteriorly, costa slightly arched, considerably bent beyond middle, apex obtuse-angled, hindmargin straight, not oblique; reddish-ochreous, slightly mixed with whitish-ochreous, and with a few scattered metallic-grey scales; basal patch dark slaty-grey mixed with blackish, becoming reddish-ochreous towards inner margin, its outer edge defined by a thick curved blackish line from costa before one-third, becoming obsolete below fold; costa shortly and obliquely strigulated with blackish throughout; a small blackish subquadrate oblique spot on middle of costa, between which and basal patch the costa is broadly suffused with dark slaty-grey, except on extreme edge; a triangular blackish space at apex, extending along apical third of costa and upper half of hindmargin, shading into ground-colour towards disc, intersected by two or three oblique irregular partially confluent leaden-metallic lines from costa to hindmargin about middle, and containing short oblique pale ochreous costal strigulæ, of which the last is more conspicuous and produced to hindmargin beneath apex; inner margin obscurely strigulated with dark grey; an irregular suffused fuscous spot on inner margin towards anal angle, extending nearly to middle of disc: cilia dark slaty-grey, with a blackish basal line, towards anal angle reddish-ochreous. Hindwings dark fuscous-grey; cilia grey, tips more whitish-grey.

A very distinct and elegantly-marked species, differing considerably in form of wing from the preceding.

One fine specimen in the collection of Mr. G. Masters, taken on the Richmond River.

4. PENTHINA, Tr.

Thorax with a strong erect crest. Antennæ in male shortly ciliated. Palpi moderate, porrected, second joint roughly haired above and below, terminal joint distinct. Posterior tibiæ fringed with hairs above. Forewings rather broad, costa in male simple, rather strongly arched. Hindwings rounded, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 from a point, 5 approximated to 4 at base, 6 and 7 separate.

This genus is the type of a considerable group, characterised usually by the presence of a well-marked thoracic crest, the origin of veins 3 and 4 of hindwings from a point, and the approximation of 5 to 4 at base. *Sericoris*, Tr., separated from *Penthina* by the less well-marked crest, appears to me at present insufficiently distinguished, but is not represented in Australia, the two species described below belonging truly to *Penthina*.

Larva sixteen-legged, feeding in rolled or spun-together leaves, or in stems and seedheads.

The genus is rather numerously represented in Europe and North America; of the two Australian species *P. helicana* may be separated from *P. doxasticana* by the dark triangular costal spot.

1. Penth. doxasticana, *n. sp.*

♂ ♀. 6‴-7¾‴. Head, palpi, antennæ, and thorax light grey or dark grey, crest of thorax sometimes black. Abdomen ochreous-grey, edges of segments whitish. Legs whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings posteriorly dilated, costa slightly arched, apex nearly rectangular, hindmargin slightly oblique; light grey, irrorated with blackish scales in rows, sometimes suffused with darker grey; costa with numerous short oblique blackish strigulæ, more or less suffused with ferruginous; central fascia generally obsolete or indicated by two or three faintly darker spots, sometimes tolerably distinct but ill-defined, narrow, dark grey, from middle of costa to inner margin before anal angle, interrupted beneath costa; four or five alternate costal strigulæ towards apex dilated into very small subquadrate black spots: cilia ferruginous-grey with a sharply defined black basal line on upper half of hindmargin, wholly whitish on lower half, blackish beneath anal angle. Hindwings fuscous-grey, paler at base, hindmarginal edge darker; cilia whitish or grey-whitish, with a dark grey line near base.

Perhaps more allied to the European *P. profundana*, F. than to any other species, but very distinct; the white cilia on lower half of hindmargin apparently indicate some relationship with *Ant. phyllanthana*.

I took five specimens in a grass-field near Parramatta, New South Wales, in June and July, flying at sunset; and also one near Brisbane, in September.

2. Penth. helicana, *n. sp.*

♀. 7½‴. Head, palpi, antennæ, and thorax pale ochreous, suffused with reddish-fuscous. Abdomen dark ochreous-grey. Legs whitish-ochreous, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings rather broad, costa moderately arched, apex nearly rectangular, hindmargin slightly sinuate beneath apex; pale ochreous-fuscous, towards costa mixed with whitish; costa shortly strigulated with blackish; inner margin suffused with ochreous-fuscous; outer edge of basal patch indicated by an indistinct interrupted dark fuscous line from costa at one-fourth to inner margin before middle, before which the groundcolour is mixed with dark grey strigulæ; a dark fuscous triangular costal blotch, mixed with blackish, extending on costa from a little before middle to three-fourths, its apex reaching half across wing beyond middle of disc, connected with anterior extremity of a small cloudy ovate dark fuscous spot on disc at two-thirds; an ovate reddish-ochreous-fuscous clearly-defined blotch before hindmargin above middle, its lower and narrow end resting on middle of hindmargin; a small irregular ochreous-fuscous spot above anal angle; a small roundish black apical spot: cilia pale brownish-ochreous, whitish-ochreous towards anal angle, with a whitish-ochreous line at base along hindmargin, on upper half with three or four dark fuscous-grey transverse bars starting from black dots on hindmargin. Hindwings fuscous-grey; cilia whitish-grey, with a dark grey line.

In form resembling the European *P. semifasciana*, Hw., but not capable of being confused with any other.

One specimen in the thick forest-growth on the Bulli Pass (2000 feet), New South Wales, in October; a second, much worn at Rosewood, Queensland, in September; and a third in Mr. G. Masters' collection, from the Richmond River.

5. SCOLIOPLECTA, *n. g.*

Thorax with a small erect crest. Antennæ in male moderately ciliated. Palpi moderate, porrected, second joint roughly haired beneath and at apex above, terminal joint distinct. Posterior tibiæ loosely scaled above. Forewings moderately broad, costa in male simple, slightly arched, hindmargin slightly oblique. Hindwings rounded, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin. Hindwings with veins 3 and 4 from a point, 5 parallel to 4, 6 and 7 remote at origin, 7 rising from upper margin of cell considerably before the angle.

Apparently allied to the group of *Penthina,* but the neuration of the hindwings is abnormal, and separates the genus from all others of the family with which I am acquainted. The only species is a handsome and distinct insect.

1. Scol. comptana, Walk.

(*Sciaphila comptana,* Walk., Brit. Mus. Cat. 353).

♂. 8″. Head dark fuscous mixed with whitish. Palpi whitish, mixed with dark fuscous beneath, second joint with three obscure dark fuscous bands. Antennæ grey. Thorax dark fuscous, mixed with white posteriorly. Abdomen dark fuscous, segments ochreous-tinged towards base. Legs ochreous-white, all tarsi and tibiæ with sharply-defined black bands. Forewings moderate, costa hardly arched, hindmargin slightly oblique, hardly rounded; deep ferruginous, coarsely mixed with black, and with a few scattered leaden-metallic scales, with two sharply defined white bands; disc with numerous small tufts of raised scales; costa and inner margin shortly strigulated with blackish:

base of wing mixed with white; first band from costa at one-third to inner margin before middle, rather irregularly margined, somewhat attenuated beneath costa, shortly dilated on inner margin; second band from costa at two-thirds to inner margin at three-fourths, rather narrow throughout, slightly dilated on inner margin, its anterior margin emitting a short oblique tooth in middle; three white costal strigulæ before apex, from the anterior one of which proceeds a faint leaden-metallic line to anal angle, the two posterior nearly confluent with a white sinuate streak near hindmargin above middle; beyond the second band the black colour tends to form thick lines along the veins: cilia white, towards anal angle ochreous, with a blackish line near base. Hindwings deep yellow towards base, posteriorly very broadly suffused with dark fuscous, sometimes almost wholly dark fuscous; cilia whitish, with a broad dark fuscous line near base.

Easily known by the white bands on the roughened dark ferruginous and black forewings.

Three specimens taken at Parramatta and Murrurundi, New South Wales, in October and November. Walker's type is said to be from Sydney.

6. EPALXIPHORA, *n. g.*

Thorax with a very large erect crest on each side of back, and a small double crest behind. Antennæ in male thinly ciliated. Palpi moderate, straight, porrected, second joint with closely-appressed scales, terminal joint exposed. Posterior tibiæ fringed with hairs above. Forewings oblong, moderately broad, costa in male simple, dilated before middle, straight towards apex, apex acutely produced, falcate, hindmargin obliquely rounded beneath. Hindwings rounded-trapezoidal, broader than forewings, indented beneath apex. Forewings with veins 7 and 8 separate, 7 running to hindmargin. Hindwings with veins 3 and 4 from a point, 5 moderately approximated to 4 at base, 6 and 7 stalked.

The facies of this genus is very singular, and it seems rather uncertain to what group it is most allied, but it agrees in its main characters with *Penthina*, differing widely, however, in the peculiar triple crest of the thorax, and the conspicuously falcate apex of forewings.

The only species is from New Zealand, and is of large size.

1. Epalx. axenana, *n. sp.*

♂. 12½‴. Head ochreous-white, spotted with light ochreous irrorated with dark fuscous. Palpi light ochreous irrorated with fuscous. Antennæ whitish-ochreous, slenderly annulated with dark fuscous. Thorax light greyish-ochreous mixed with fuscous, with two black transverse lines towards anterior margin, side-tufts whitish-ochreous. Abdomen whitish-ochreous. Legs pale ochreous, anterior and middle tibiæ and all tarsi banded with dark fuscous, posterior tibiæ ochreous-whitish. Forewings elongate, oblong, apex falcate; whitish-ochreous, irregularly mixed and clouded with brownish-ochreous, extreme costal edge white, obscurely spotted beneath with fuscous; the veins posteriorly marked with dark fuscous; outer edge of basal patch represented by a blackish-fuscous spot on costa at one-fifth, contracted in middle, and a blackish-fuscous cloudy spot, somewhat outwardly oblique, on inner margin before middle, connected together by a narrow ill-defined, twice strongly angulated, ochreous-fuscous streak; a narrow reddish-fuscous streak starting from costa at two-fifths, very oblique, extending to disc above anal angle a little below middle, thence bent rather obliquely inwards and ending just before reaching anal angle, most distinct towards extremities; a longitudinal elongate dark ochreous-grey-fuscous spot in middle of disc, its upper edge emitting a sharp inwardly oblique tooth in middle, its posterior extremity touching the oblique transverse streak; a dark reddish-fuscous transverse spot on inner margin slightly beyond middle, its apex almost suffused into the central spot; a flattened triangular dark reddish-fuscous spot along costa from near middle to a little before apex, its apex reaching one-fourth across wing; an ill-defined sinuate fuscous streak extending from central transverse streak above angulation to hindmargin below apex: cilia ochreous-white, transversely barred with dark reddish-fuscous. Hindwings whitish, faintly mottled with pale grey towards hindmargin, with two or three scattered faint grey spots; cilia white, with a row of dark grey spots along base.

Very irregularly marked, and dissimilar to any other known species.

One specimen taken at rest on a tree-trunk near Wellington, New Zealand, in January.

7. EUDEMIS, Hb.

Thorax slightly crested. Antennæ in male thinly ciliated. Palpi rather short, porrected, second joint shortly rough-scaled beneath and at apex above, terminal joint distinct. Posterior tibiæ with appressed scales. Forewings elongate, subtriangular, costa hardly arched, in male simple, hindmargin obliquely rounded. Hindwings rounded, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell indicated. Hindwings with veins 3 and 4 separate at origin, 5 slightly approximated to 4 at base, 6 and 7 separate.

Larva sixteen-legged, feeding in spun-up shoots.

Allied to *Sericoris*, but distinguished from all other genera of this family by the separation of veins 3 and 4 of hindwings at base.

The only species found in Australia is not native, but has been introduced from Europe with the vine, on which it feeds; there are several other European species.

1. Eud. botrana, *Schiff.*

(*Grapholita parvulana*, Walk., Brit. Mus. Cat. 391.)

♂ ♀. 4¾″-5″. Head and palpi ochreous. Antennæ grey. Thorax ochreous, mixed with blackish-fuscous. Abdomen dark ochreous-grey, anal tuft ochreous-whitish. Legs ochreous-whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings elongate, costa nearly straight, somewhat bent before apex, hindmargin rounded, very oblique; whitish, with numerous scattered blackish-grey transverse strigulæ, costa and inner margin finely strigulated; costa and inner margin suffused with greyish-ochreous near base; outer edge of basal patch represented by a slender greyish-ochreous slightly-curved fascia from one-fourth of costa to one-third of inner margin; central fascia straight, extending from costa slightly beyond middle to inner margin slightly beyond middle, broad and blackish-grey towards costa, rapidly attenuated below middle and greyish-ochreous; a small triangular blackish-grey ochreous-tinged spot on inner margin before anal angle; a greyish-ochreous slender streak from costa beyond central fascia to hindmargin below middle, dilated towards hindmargin into a roundish spot; a greyish-ochreous apical spot, containing two white costal strigulæ before apex, extreme apex blackish; a slender somewhat interrupted blackish line along hindmargin: cilia pale ochreous, towards anal angle whitish, with two dark grey lines. Hindwings grey, paler and subtransparent towards base; cilia pale grey, with a dark grey line near base.

Described from Australian specimens, which however do not seem to differ noticeably from others from the south of France.

Taken rather commonly at Parramatta, New South Wales, and also at Rosewood, Queensland, in August, September, March and May. The larva feeds in the shoots of vines; but as the imago seems to occur also in the native bush, it is possible that it may have adapted itself to other foodplants.

8. Aphelia, Stph.

Thorax smooth. Antennæ in male shortly ciliated. Palpi elongate, porrected, second joint roughly haired above and below, attenuated posteriorly, terminal joint distinct or partly concealed. Posterior tibiæ fringed with hairs above. Forewings elongate, rather narrow, costa in male simple, slightly arched, apex acute, hindmargin straight, very oblique. Hindwings rounded-elongate, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 from a point, 5 very closely approximated to 4 at base, 6 and 7 stalked.

A small genus of rather doubtful affinity, but apparently connected with *Sericoris* by the rootfeeding species of *Orthotænia*. The larva is believed to feed in the stems of *Juncus*. The species described below appears to occur all over the world, whether introduced or indigenous it is hard to say; it is at all times very variable, but I do not think the local forms can be maintained as distinct species. It is abundant through Europe, and occurs also in North America; I have taken it in Ceylon, and it is found in both Australia and New Zealand.

1. Aph. lanceolana, *Hb.*

♂ ♀. 6½‴-9‴. Head, palpi, antennæ, and thorax varying from pale ochreous to ochreous-brown, sometimes reddish-tinged; palpi variable in length (in one New Zealand specimen extremely elongate). Abdomen elongate, varying from whitish-ochreous to fuscous. Legs whitish-ochreous, more or less suffused with fuscous. Forewings elongate, costa very slightly arched, apex acute, hindmargin very oblique, slightly rounded beneath; very variable; pale ochreous, often almost wholly suffused with fuscous, sometimes unicolorous fuscous mixed with reddish-ochreous; costa generally with numerous very fine oblique darker strigulæ; sometimes a straight ill-defined dark fuscous central streak from base to apex, entire or interrupted so as to form two or three irregular spots, or visible at apex only, or wholly absent: cilia varying from whitish-ochreous to fuscous. Hindwings grey-whitish, slightly darker at apex; cilia grey-whitish, sometimes with a darker line.

The description refers to Australian and New Zealand forms only, so far as I am acquainted with them.

Occurs, not commonly, round Sydney, Parramatta, and Campbelltown, New South Wales, from December to March, in damp places and at light; also in the district of Duaringa, Queensland; and I took it at Hamilton, New Zealand, in January.

9. STIGMONOTA, Hw.

Thorax smooth. Antennæ in male shortly ciliated. Palpi rather short, arched, ascending, second joint roughly haired beneath, terminal joint distinct. Posterior tibiæ loosely scaled. Forewings short, moderately broad, costa in male simple, gently arched, hindmargin rounded or somewhat sinuate. Hindwings rounded, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 stalked, 5 parallel to 4, 6 and 7 separate.

Belongs to the group of *Grapholitha*, in which it is distinguished by the ascending palpi, and the parallel veins 4 and 5 of the hindwings. The species are small, and usually dark with a pale often obsolete spot on middle of inner margin. The known larvæ feed principally in the seed-pods of *Leguminosæ*.

The genus is represented by some number of species in Europe and North America; and I am acquainted with five from Australia, which may be thus distinguished:

A. Hindwings orange towards base.
  1. Dorsal blotch distinct .. .. .. 1. zapyrana.
  2. Dorsal blotch obsolete .. .. .. 2. conficitana.
B. Hindwings wholly fuscous.
  1. Dorsal blotch distinct .. .. .. 3. parvisignana.
  2. Dorsal blotch absent.
    a. Costa clearly strigulated throughout with whitish .. .. 4. iridescens.
    b. Costa without pale strigulæ .. .. 5. floricolana.

1. Stigm. zapyrana, *n. sp.*

♂ ♀. 5‴-5½‴. Head, antennæ, and thorax dark fuscous, face more or less whitish. Palpi ochreous-whitish. Abdomen blackish, beneath with white rings. Legs ochreous-white, anterior tibiæ with two dark fuscous rings, all tarsi banded with dark fuscous. Forewings short, broad, costa hardly arched, hindmargin slightly oblique, rounded beneath; dark fuscous, with a slight ochreous reflection; costa with numerous whitish strigulæ, more oblique towards base; a moderately narrow ochreous-white transverse parallel-sided blotch on middle of inner margin, reaching half across wing, rather curved outwards towards its extremity, containing three slender blackish lines parallel to its anterior edge, the first and third often broken or obsolete; three blue metallic transverse lines; first from before middle of costa, very short, oblique; second from beyond middle of costa to anal angle, angulated outwards in middle, below angulation leaden-metallic; third from costa at three-fourths to hindmargin beneath apex; lower half of second metallic line bordered posteriorly with ochreous-whitish, between which and hindmargin is a row of four or five short black linear marks, separated by whitish scales: cilia metallic silvery-grey, becoming bright blue in certain lights. Hindwings bright deep orange, with a rather narrow blackish border along hindmargin, somewhat variable in breadth, rather attenuated at anal angle; cilia ochreous-white, more ochreous towards anal angle, with a blackish line near base.

A very handsome species, conspicuously distinct by the bright orange hindwings of both sexes.

Rather common, flying briskly in the hot sunshine round the purple blossoms of *Hardenbergia monophylla (Leguminosæ);* occurs at Sydney, Parramatta, and Bulli, New South Wales; near Melbourne; and at Brisbane, Helidon, and Toowoomba, Queensland; in September, October, and December.

2. Stigm. conficitana, Walk.

(*Carpocapsa conficitana*, Walk., Brit. Mus. Cat. 412).

♀. 5‴. Head and thorax dark fuscous. Forewings in form resembling *S. zapyrana;* dark fuscous; dorsal blotch obsolete; only distinct markings a transverse silvery-metallic line crossing dorsal half of wing towards hindmargin, followed by a row of four or five black linear dots. Hindwings dull orange, hindmargin and inner margin broadly and suffusedly dark fuscous.

Nearly allied to *S. zapyrana,* but in a considerable series of both sexes of that species I have seen no specimen approaching it; distinguished by the obsolescence of the dorsal blotch and costal markings, and by the duller colour, broader hindmarginal band, and dark suffusion of inner margin of hindwings.

Walker's type is stated to be from Moreton Bay, Queensland; I have seen no other.

3. Stigm. parvisignana, *n. sp.*

♀. 5½‴. Head, antennæ, and thorax dark fuscous, face mixed with whitish. Palpi ochreous-whitish. Abdomen blackish, beneath with white rings. Legs whitish, tarsi banded with dark fuscous. Forewings moderately broad, costa somewhat bent before apex, hindmargin rather oblique; dark fuscous; costa with numerous whitish anteriorly blackish-margined oblique strigulæ; a narrow white parallel-sided streak from middle of inner margin, reaching half across wing, curved outwards towards extremity, containing a slender blackish central line; three indistinct bluish-metallic lines from costa, placed as in *S. zapyrana,* but obscure, lower half of second distinct, silvery-metallic, blackish-margined; between it and hindmargin is a row of four short black linear marks: cilia dark fuscous, extremities whitish. Hindwings dark fuscous, somewhat paler towards base; cilia dark fuscous, extremities whitish towards anal angle.

Resembling *S. zapyrana* in the markings of the forewings, but rather darker and more obscure, dorsal streak more slender and with a single dark line, and hindwings wholly dark fuscous.

One specimen taken in bush near Sydney in August.

4. Stigm. iridescens, *n. sp.*

♂ ♀. 3¾"-4". Head and thorax dark fuscous, mottled with ochreous-white. Palpi whitish, beneath mixed with dark fuscous. Antennæ dark fuscous. Abdomen dark greyish-fuscous, beneath in male snow-white, in female whitish-grey. Legs whitish, tarsi banded with dark fuscous. Forewings rather elongate, in female slightly broader, costa hardly arched, hindmargin obliquely rounded; dark greyish-fuscous, very finely transversely strigulated with whitish; costa with short oblique broader whitish strigulæ throughout; about eight ill-defined grey-whitish transverse lines from inner margin between base and two-thirds, reaching about half across wing, in female more indistinct; a faint bluish-metallic line from costa beyond middle to anal angle, angulated outwards in middle, distinct and silvery-metallic on lower half; between lower half of this line and hindmargin the ground colour is suffused with whitish (less distinctly in female), with a row of about five short linear black marks: cilia grey, whitish towards base, with a black basal and another black central line. Hindwings in male fuscous-grey, hindmargin narrowly dark fuscous, in female wholly dark fuscous, towards apex blackish; cilia grey-whitish, with a dark fuscous basal line.

Distinguished by the absence of a dorsal blotch, and by the grey-whitish transverse lines and suffusion at anal angle of forewings; the very fine whitish strigulation causes the ground-colour to appear lighter than in the allied species.

Four specimens taken at Parramatta and Murrurundi, New South Wales, in October.

5. Stigm. floricolana, *n. sp.*

♂ ♀. 3¾″-4″. Head, antennæ, and thorax dark fuscous, face and palpi whitish-ochreous. Abdomen blackish-fuscous, beneath ochreous-whitish. Legs grey-whitish, tarsi suffusedly banded with dark fuscous. Forewings moderate, costa hardly arched, hindmargin rather oblique; dark fuscous, with a slight golden tinge; costa with short oblique black strigulæ, between which near apex the costal cilia are shortly ochreous-white; the wing is crossed by numerous irregular very faint leaden-metallic lines, often obsolete; cilia silvery-grey, towards base silvery-whitish, with a black basal line. Hindwings dark fuscous, darker towards hindmargin; cilia grey-whitish, with a dark fuscous line near base.

Characterised by the entire absence of any pale markings on forewings, except in cilia.

This small and inconspicuous species frequents the flowers of *Bursaria spinosa*, (a shrub belonging to the *Pittosporeæ*,) sitting on them in the hot sunshine; it is not uncommon near Parramatta and occurs also at Bowenfels on the Blue Mountains, 2,500 feet above the sea.

10. CARPOCAPSA, Tr.

Thorax smooth. Antennæ in male thickened, not ciliated. Palpi moderate, ascending, appressed to face, second joint shortly rough-scaled beneath, terminal joint distinct. Posterior tibiæ loosely scaled. Forewings moderately broad, costa in male simple, slightly arched, hindmargin rather oblique, slightly sinuate. Hindwings rounded, broader than forewings, in male with a short membranous ridge on lower median near base, and a grooved channel below it. Forewings with veins 7 and 8 separate, 7 running to hindmargin. Hindwings with veins 3 and 4 stalked, 5 nearly parallel to 4, 6 and 7 separate.

Allied to *Stigmonota*, but separated from it and other allied genera by the ridge and groove of the hindwings in male. From

Epitymbia, which has a somewhat similar structure, it differs by the separation of veins 7 and 8 of forewings, and the absence of a costal fold.

The larvæ feed in fruits, and the genus is indigenous in Europe and North America; the only species found in Australia has been introduced together with the apple-tree,

1. Carp. pomonella, L.

♂ ♀. 7½‴-9‴. Head, palpi, and thorax dark greyish-fuscous, slightly sprinkled with whitish. Antennæ dark fuscous. Abdomen dark fuscous, segmental margins whitish-tinged. Legs whitish, anterior and middle tibiæ and all tarsi dark fuscous with slender whitish rings. Forewings moderately broad, posteriorly dilated, costa hardly arched, hindmargin oblique, indented beneath apex; ashy-grey, with numerous irregular transverse greyish-fuscous lines, coalescing to form a rather narrow transverse band at one-third from base; a moderately broad elongate-ovate coppery-fuscous patch on anal angle, extending along hindmargin nearly to apex, preceded and followed by a silvery-metallic line, and containing two small silvery marks on anal angle; the anterior silvery line is preceded by a blackish streak, extending from inner margin half-way across wing; cilia silvery-grey, towards base silvery-whitish, with a black basal line. Hindwings fuscous-grey, apex rather darker; cilia grey-whitish, with a dark fuscous line near base.

Described from Australian specimens.

Common round Melbourne and elsewhere in Victoria, and plentiful in Tasmania, where the larva causes considerable damage in orchards; I have also specimens from Wellington in New Zealand, where it is probably of general occurrence; taken from October to December.

11. EPITYMBIA, *n. g.*

Thorax smooth. Antennæ in male thickened, not ciliated. Palpi moderate, porrected, second joint with appressed scales, terminal joint distinct. Posterior tibiæ fringed with hairs above. Forewings somewhat oblong, posteriorly dilated, costa in male with a short narrow basal fold, shortly arched at base, slightly sinuate in middle, hindmargin oblique. Hindwings as broad as forewings, hindmargin indented below middle; a large membranous scaled ridge on submedian vein towards base, and a thickened place above it on subcostal (? in male only). Forewings with veins 7 and 8 stalked, 7 running to hindmargin. Hindwings with veins 3 and 4 stalked, 5 approximated to 4 at base, 6 and 7 stalked.

A peculiar and abnormal genus, not evidently related to any other; I have placed it here, because the ridge of the hindwings (though much larger and more conspicuous) is analogous to what is found in *Carpocapsa*, but it disagrees in the stalking of veins 7 and 8 of forewings, and of veins 6 and 7 of hindwings, and in the presence of a small and inconspicuous costal fold; the form of the wings is also unusual, and the location of the genus must therefore remain uncertain at present.

1. Epit. alaudana, *n. sp.*

♂. 8″. Head, palpi, antennæ, thorax, and abdomen dark fuscous. Legs pale greyish-ochreous, anterior and middle tibiæ and all tarsi dark fuscous with pale greyish-ochreous rings. Forewings moderate, dilated posteriorly, costa abruptly bent at base, sinuate in middle, hindmargin obliquely rounded; dark fuscous, irregularly mixed with black; a small somewhat oblong, rather oblique, ochreous-whitish spot on middle of inner margin; an ochreous-whitish band along hindmargin, irrorated with fuscous, and on hindmarginal edge becoming fuscous, moderately broad on costa and gradually attenuated to anal angle, its anterior edge sharply defined and emitting a short tooth in middle: cilia dark fuscous mixed with ochreous-whitish, especially towards anal angle. Hindwings whitish-ochreous above the ridge, suffused with fuscous-grey below the ridge and towards hindmargin; cilia ochreous-whitish, with two broad suffused grey lines.

Not like any other species known to me.

One male taken in bush near Parramatta, New South Wales, in September.

12. CROCIDOSEMA, Z.

Thorax smooth. Antennæ in male somewhat thickened, not ciliated. Palpi moderate, porrected, second joint somewhat arched, roughly haired beneath and at apex above, terminal joint nearly concealed. Posterior tibiæ loosely scaled. Forewings elongate, rather narrow, costa in male with short basal fold, slightly arched, hindmargin sinuate, oblique. Hindwings elongate-trapezoidal, broader than forewings; in male with a dense erect tuft of hairs on surface at base beneath lower median vein. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 stalked, 5 very closely approximated to 4 at base, 6 and 7 separate.

Belongs to the group of *Pædisca* and *Grapholitha*, amongst which it is distinguished by the conspicuous tuft of hairs on base of hindwings in male. There is only one species in the genus, which has been introduced from Europe, where however it seems to have been but little noticed; it was originally described by Zeller from a single Sicilian specimen, and was subsequently met with in Spain, and latterly also in other southern localities.

1. Croc. plebeiana, Z.

♂ ♀. 5½‴-7½‴. Head and palpi ochreous-whitish, sometimes tinged with greyish-ochreous above. Antennæ whitish, indistinctly suffused with grey. Thorax ochreous-whitish, mixed or suffused with fuscous-grey. Abdomen grey, anal tuft of male whitish. Legs ochreous-whitish, anterior and middle tibiæ and all tarsi ringed with dark fuscous. Forewings rather narrow not dilated, costa slightly arched, hindmargin sinuate, oblique; whitish, more or less ochreous-tinged, especially in female, with coarse irregular scattered blackish-grey strigulæ; costa with fine oblique blackish-grey strigulæ, and four small dark ochreous-grey spots towards apex; basal patch dark ochreous-grey strigulated with whitish, in female obsolete above middle, its outer edge extending from costa at one-fourth to inner margin beyond one-third, very obtusely angulated about middle; central fascia dark ochreous-grey, ill-defined, oblique, running from middle of costa to inner margin before anal angle, slender towards costa, rather broader beneath, containing a short longitudinal black mark near inner margin, above which is often a small silvery spot; beyond central fascia the wing is more or less suffused with ochreous-grey, except on a partially whitish, strongly silvery-margined, oval patch on anal angle, extending about half across wing, and containing near its posterior edge three black dots; above this patch is sometimes a blackish mark towards apex: cilia silvery-white, mixed with ochreous-grey points, and becoming dark grey towards apex. Hindwings rather thinly scaled, fuscous-grey; cilia silvery-white, with a dark grey line near base and a faint grey central line.

A dull-looking species, but not closely resembling any other.

Common near cultivated ground, and also comes freely to light; occurs round Sydney, Parramatta, and Morpeth, New South Wales, and at Melbourne, from December to March, and in July; I have also received it from the district of Duaringa, in Queensland. Prof. Zeller informs me that the larva feeds on *Althea* and *Lavatera (Malvaceæ)*, with either of which it may have been introduced.

13. PALÆOBIA, *n. g.*

Thorax smooth. Antennæ in male ciliated. Palpi moderate, porrected, second joint with a long dense tuft of hairs beneath towards apex, terminal joint concealed. Posterior tibiæ fringed with hairs above. Forewings elongate, rather narrow, costa in male simple, moderately arched, hindmargin rather strongly sinuate below apex. Hindwings elongate, broader than forewings. Forewings with veins 7 and 8 stalked, 7 running to hindmargin, secondary cell indicated or distinct. Hindwings with veins 3 and 4 stalked, 5 closely approximated to 4 at base, 6 and 7 stalked.

Larva sixteen-legged, mining in blotches in leaves, or feeding in spun-up shoots.

This genus may be regarded as the type of a small group, to which *Rhopobota* and *Holocola* also belong, related in general characters to the group of *Grapholitha* (particularly to the genus *Phoxopteryx*), but distinguished by the stalking of veins 7 and 8 of forewings. The same character suffices to separate it from the group of *Strepsiceros*, between which and the group of *Grapholitha* it is apparently intermediate. *Palæobia* differs from *Holocola* by the absence of a costal fold in male, and from *Rhopobota* by the dense tuft of palpi. Superficially it much resembles *Phoxopteryx* in form, colour, and marking, but the apex of forewings is never actually falcate. The mining habit of the larva of at least one species is very curious, and unparalleled among the *Tortricina*.

The genus is probably rather numerously represented in Australia; I am acquainted with nine species, which may be tabulated as follows:

A. Forewings whitish, with dark grey and ferruginous markings; apex strongly produced.
  1. Anterior half of costa whitish.
    a. Central fascia distinct .. .. ..3. volutana.
    b. Central fascia merged with costal spot..1. anguillana.
  2. Anterior half of costa dark ferruginous.
    a. Costa beyond middle whitish .. ..4. erythrana.
    b. Costa beynd middle dark ferruginous..2. infectana.

B. Forewings whitish-ochreous or ochreous-brown; apex shortly produced.
  1. Head and thorax ochreous-brown.
    a. Hindwings dark fuscous .. ..8. crepusculana.
    b. Hindwings golden brownish-ochreous.
      i. Cilia of forewings brownish-ochreous 5. hibbertiana.
      ii. Cilia of forewings grey, with two white subapical spots .. ..6. himerodana.
  2. Head and thorax pale ochreous mixed with fuscous .. ..7. fidana.
  3. Head and thorax whitish-ochreous, face white .. ..9. segetana.

1. Pal. anguillana, *n. sp.*

♀. 5¾″. Head ochreous-fuscous above, whitish on sides, strongly tufted between antennæ. Palpi ochreous-white, tuft dark fuscous towards extremity. Antennæ dark fuscous. Thorax ochreous-grey, paler on shoulders. Abdomen grey. Legs whitish, anterior tibiæ and all tarsi banded with dark fuscous. Forewings moderately narrow, costa moderately arched, apex strongly produced, hindmargin rounded beneath; whitish, with a few grey scales, and with a faint greyish suffusion towards anal angle; anterior half of costa strigulated with blackish; a dark grey irregularly semi-oval patch on anterior half of inner margin, extending from base to a little beyond middle, and at its broadest part reaching a little more than half across wing; a rather larger dark ferruginous irregularly oblong patch on posterior half of costa, extending on costa from a little before middle to apex, and reaching nearly two-thirds across wing, its lower edge parallel to inner margin and rather ill-defined, its anterior edge outwardly oblique and somewhat parallel to posterior edge of the grey patch: cilia silvery-whitish, with a dark grey line near base.

Nearly allied to *P. infectana*, but distinguished readily from it by the whitish colour extending along anterior half of costa, the clearer colouring, and the rather larger size. In form of markings it recalls *Phox.* (?) *obtusana*, Hw.

Larva light green (undescribed); feeds in spun-up shoots of *Correa speciosa (Rutaceæ)* in September; the imago emerged in October.

One specimen bred as above from a larva found near Parramatta, New South Wales; a second taken near the same place in August.

2. Pal. infectana, *n. sp.*

♂. 4½"-4¾". Head and thorax brownish-ochreous. Palpi ochreous-white, second joint with a dark fuscous spot, tuft dark fuscous towards extremity. Antennæ dark fuscous. Abdomen dark grey, extremity whitish. Legs whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings narrow, costa moderately arched, apex strongly produced, hind margin rounded beneath; dull dark ferruginous, becoming greyer towards inner margin, and mixed with dark fuscous; costa obliquely strigulated throughout with ashy-whitish; an ill-defined whitish longitudinal streak starting from base beneath costa, bent downwards at one-third and ending in an oval silvery-whitish patch on anal angle; between this streak and inner margin the basal third is suffused with dark fuscous-grey; cilia grey. Hindwings light fuscous grey; cilia grey with a pale line at base.

Distinguished by the whitish colour being confined to a sinuate longitudinal streak from base to anal angle, so that the whole costa is dark ferruginous; and also by the dull rather confused colouring, and small size.

Two specimens taken in low scrub near Sydney in August and April, and two others at Mittagong (2000 feet) in March.

3. Pal. volutana, *n. sp.*

♂. 7". Head ochreous-whitish, greyish-tinged on crown. Palpi ochreous-white, extremity of tuft greyish-tinged. Antennæ dark fuscous. Thorax dark grey, on shoulders ochreous-whitish. Abdomen grey. Legs whitish, anterior tibiæ and all tarsi ringed with dark fuscous. Forewings moderately narrow, somewhat broader posteriorly, costa moderately arched, apex strongly but obtusely produced, hindmargin rounded beneath; white, with a few irregular dark grey strigulæ; costa strigulated throughout with dark grey; a dark grey broadly semi-oval patch on anterior half of inner margin, extending almost from base to middle, at its broadest part reaching more than half across wing, posteriorly merged into an ill-defined grey suffusion extending along inner margin to anal angle; central fascia dark ferruginous, narrow, oblique, starting from middle of costa, beneath middle merged in the grey suffusion; an ill-defined dark ferruginous elongate-triangular patch towards apex, its base resting on apex and upper half of hindmargin, its apex meeting central fascia above middle; a narrow ill-defined greyish suffusion along lower half of hindmargin; cilia silvery grey. Hindwings fuscous-grey; cilia grey-whitish, with an indistinct darker line near base.

Differs from both the preceding species by the costa being white beyond middle, so that there is a distinct well-defined central fascia; the grey dorsal patch is rather more restricted and more clearly defined, and the insect is considerably larger. From *P. erythrana*, which is also smaller, it is at once separated by the well-defined grey dorsal patch towards base, and the absence of the dark ferruginous streak along anterior half of costa.

One specimen taken by Mr. G. H. Raynor at Warragul, in Gippsland, Victoria, in December.

4. Pal. erythrana, *n. sp.*

♂. 5½″. Head ochreous-fuscous, face whitish. Palpi white, second joint with two dark fuscous spots, tuft dark fuscous towards extremity. Antennæ grey. Thorax brownish-ochreous, paler posteriorly. Abdomen dark grey, with an ochreous band near base, anal tuft silvery-whitish. Legs ochreous-whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings narrow, costa moderately arched, apex strongly but obtusely produced; white, on dorsal half slightly reddish-tinged, and suffused with grey along inner margin; costa shortly strigulated with dark fuscous-grey; a cloudy dark fuscous-grey spot in disc at one-third from base; a dark reddish-ferruginous moderately broad streak from base along costa to middle, thence bent downwards and ending in a dark grey spot on disc at two-thirds from base; three irregular oblique dark ferruginous lines from costa between middle and apex to hindmargin; an ill-defined cloudy grey patch on hindmargin, darkest towards apex, extending obscurely to anal angle, and tending to unite on disc with the spot at two-thirds; apex dark ferruginous; cilia grey, mixed with ferruginous, becoming dark ferruginous at apex, where the extremities are dark fuscous; costal cilia white. Hindwings ochreous-fuscous, more greyish towards hindmargin; cilia grey.

Distinguished from all other species by the dark ferruginous streak along anterior half of costa, bent downwards in middle so as to leave posterior half of costa white.

One specimen taken in dry bush near Sydney, in October.

5. Pal. hibbertiana, *n. sp.*

♂ ♀. 4″-5¾″. Head and thorax dark ochreous-fuscous. Palpi whitish-ochreous, second joint with a dark fuscous spot, tuft blackish-fuscous towards extremity. Antennæ dark fuscous. Abdomen dark ochreous-fuscous. Legs whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings moderately narrow, somewhat dilated posteriorly, costa moderately arched, apex obtusely produced; rather dark fuscous, beyond middle suffused with blackish; costa obscurely strigulated with blackish, with four pairs of pale strigulæ between middle and apex, the first two pair leaden metallic and produced as obscure lines to anal angle, third and fourth pair whitish, third connected with hindmargin below apex by a short leaden-metallic line; a whitish or ochreous-white streak beneath costa from base nearly to middle, sharply defined beneath but suffused into ground-colour towards costa; in male a moderately large roundish ochreous-whitish patch on anal angle, mixed with fuscous, in female not indicated; apex ferruginous-tinged: cilia brownish-ochreous, mixed with whitish, especially towards anal angle, with a dark fuscous spot at apex. Hindwings golden brownish-ochreous, towards hindmargin dark fuscous, in female more fuscous-tinged throughout; cilia brownish-ochreous, mixed with whitish towards extremities, with an obscure dark grey line near base.

Nearly allied to *P. himerodana*, but smaller and darker, especially in male; the first two pairs of costal pale strigulæ not white but leaden-metallic, the whitish streak from base rather shorter and more suffused, the cilia brownish-ochreous, and a large pale patch on anal angle in male.

Larva slender, cylindrical, pale yellowish; head broad, pale brown: mining first a straight gallery, then a large crumpled blotch in leaves of *Hibbertia volubilis (Dilleniaceæ)*, the lower surface of the mine contracting and the upper becoming shrivelled and brown; feeding in November and December. Pupa pale brown, lying free within the mine. The imagos from these larvæ emerged late in December.

Common at Sydney, flying in the sunshine near its foodplant, and occurs also in the forest on the Bulli Pass, New South Wales, from September to December, and in March; I also bred it plentifully from the larvæ as above.

6. Pal. himerodana, *n. sp.*

♂ ♀. 5¼″-6½″. Head and thorax ochreous-brown, in female rather darker. Palpi white, second joint with a dark grey spot, tuft dark grey towards apex. Antennæ dark fuscous. Abdomen dark fuscous, somewhat ochreous-tinged. Legs ochreous-whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings moderately narrow, hardly dilated, costa moderately arched, apex obtusely produced; light ochreous-brown in male, darker in female and suffused with dark fuscous, especially on posterior half; costa indistinctly strigulated with dark fuscous before middle, between middle and apex with four pairs of white oblique strigulæ, separated with dark fuscous; from each of the first three pairs proceeds an irregular obscure leaden-metallic line, the first two running to near anal angle, the third to hindmargin beneath apex; a slender white central longitudinal streak from base to middle, somewhat bent downwards at extremity. margined beneath posteriorly by an obscure blackish streak; a black line along lower half of hindmargin: cilia metallic-grey on hindmargin, grey mixed with whitish towards anal angle, dark fuscous towards apex, with two white subapical spots, the lower one smaller. Hindwings golden brownish-ochreous, more dark fuscous towards apex; cilia grey, tinged with ochreous.

Very like the preceding, but larger and more lightly coloured, with four pairs of white costal strigulæ, the longitudinal streak from base clear white and black-margined beneath posteriorly, the cilia metallic-grey, with two small clear white subapical spots.

Taken rather commonly on the dry grassy hills near Murrurundi, New South Wales, in November, flying readily in the afternoon sunshine.

7. Pal. fidana, *n. sp.*

♂ ♀. 4½‴-6½‴. Head and thorax pale ochreous, mixed above with fuscous. Palpi white, tuft dark fuscous-grey towards extremity. Antennæ dark fuscous. Abdomen grey. Legs whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings moderately narrow, slightly dilated, costa moderately arched, apex obtusely produced; pale dull whitish-ochreous or brownish-ochreous, rather narrowly suffused with fuscous-grey along inner and hind margins; costa shortly strigulated with blackish, and with several pale strigulæ towards apex, of which the last two or three are faintly produced to hindmargin below apex; some scattered black dots in disc towards base, and sometimes one larger spot at about one-third from base; a grey-whitish roundish patch on anal angle, margined with faint metallic-grey, and surrounded by a blackish-fuscous suffusion extending to apex; a slender blackish line along hindmargin: cilia silvery-white in middle, greyish towards anal angle, dark fuscous round apex, with a small white subapical dash. Hindwings in male grey, sometimes ochreous-tinged; in female fuscous-grey, more strongly ochreous-tinged; cilia grey.

Easily recognised by the pale ochreous groundcolour, grey suffusion on inner and hind margins, and the whitish anal patch.

Rather common amongst low heath-like scrub in some localities round Sydney, probably attached to some species of *Hibbertia*; it occurs in November and December, and again in March.

8. Pal. crepusculana, *n. sp.*

♂. 5½‴. Head and thorax dark ochreous-brown, abdomen dark grey; rest as in *P. fidana*. Forewings in form as in *P. fidana*; wholly suffused with dark fuscous-grey, mixed with a few pale ochreous scales. Hindwings dark grey.

This species appears to be certainly distinct from *P. fidana*, to which it is nevertheless very closely allied, differing only in the very marked dark general suffusion. In the absence of a series of better specimens, I have merely indicated the species by what appears to be a sufficient diagnosis, as it might prove to be a local form only.

Two specimens, in rather poor condition, taken by Mr. G. H. Raynor at Warragul in Gippsland, Victoria, in December.

9. Pal. segetana, *n. sp.*

♂. $5\frac{3}{4}''$. Head whitish-ochreous, face white. Palpi ochreous-white, with a grey spot on second joint, tuft grey towards extremity. Antennæ ochreous-whitish. Thorax pale ochreous. Abdomen light grey. Legs ochreous-white, anterior tarsi grey at base of joints. Forewings narrow, costa moderately arched, apex obtusely produced; whitish-ochreous, with numerous coarse irregular brownish-ochreous transverse strigulæ and lines; costa with numerous very short ill-defined dark fuscous strigulæ; a slender black line along hindmargin: cilia whitish-ochreous, with a broad suffused brownish-ochreous line near base. Hindwings grey, cilia grey-whitish.

A very distinct species, well characterised by the whitish-ochreous transversely strigulated forewings, without darker markings.

Mr. G. H. Raynor took one specimen at Warragul in Gippsland, Victoria, in December.

14. HOLOCOLA, *n. g.*

Thorax smooth. Antennæ in male somewhat thickened, ciliated. Palpi moderate, porrected, second joint with a dense tuft of hairs beneath towards apex, terminal joint almost concealed. Posterior tibiæ fringed with hairs above. Forewings elongate, narrow, costa in male with a strong basal fold, slightly arched, hindmargin sinuate below apex, obliquely rounded. Hindwings elongate, broader than forewings. Forewings with veins 7 and 8 stalked, 7 running to hindmargin, secondary cell indicated or distinct. Hindwings with veins 3 and 4 long-stalked or coincident, 5 closely approximated to 4 at base, 6 and 7 separate.

Larva sixteen-legged, feeding in spun-up shoots.

This genus is only separated structurally from *Palæobia* by the strong costal fold of male, agreeing with it in neuration and all other respects; but superficially the species bear a much closer resemblance to *Strepsiceros*, with which they agree in the costal fold of male and neuration of hindwings, differing in the stalking of veins 7 and 8 of forewings, and the absence of the notch on the antennæ of male. The species are small grey insects, marked as in *Strepsiceros*.

There are five species, distinguished as follows:

A. Forewings mostly suffused with dark fuscous-grey .. ..1. triangulana.
B. Forewings not dark grey.
  1. An oblique dark streak from inner margin before middle.
    a. This streak produced in disc to three-fourths from base .. .. ..2. perspectana.
    b. This streak interrupted at middle ..3. thalassinana.
  2. Oblique streak represented only by a discal spot.
    a. Costal half of forewings grey .. ..4. quietana.
    b. Costal half of forewings whitish.. ..5. biscissana.

1. Hol. triangulana, *n. sp.*

♂ ♀. 6½″-7½″. Head and thorax light ashy-grey, mixed with blackish. Palpi light ashy-grey, internally whitish, second joint with three oblique blackish bands. Antennæ dark fuscous. Abdomen grey. Legs grey-whitish, anterior and middle tibiæ and all tarsi banded with blackish, posterior tibiæ grey. Forewings narrow, costa slightly arched, hindmargin rounded, rather oblique; light ashy-grey, more or less wholly suffused with dark fuscous-grey, especially along disc, and with indistinct transverse dark fuscous strigulæ; costa strongly strigulated with blackish; a moderately broad, outwardly very oblique, straight blackish streak, from inner margin before middle, reaching half across wing in middle of disc, anteriorly suffused, posteriorly sharply defined, truncate above, sometimes connected with costa at one-fourth by an oblique blackish line; beyond this streak are some whitish scales; a small outwardly oblique blackish acute triangular spot on anal angle, reaching nearly half across wing, followed by some whitish scales, and with a whitish suffusion between its apex and costa; a blackish irregular very oblique line from costa at three-fourths to hindmargin above middle, on its lower half bordered anteriorly with dull leaden, preceded by three ill-defined blackish spots; cilia grey, paler along base, mixed with blackish. Hindwings grey, darker posteriorly, thinly scaled towards base; cilia whitish-grey or grey.

The largest and darkest species of the genus, readily known by the strong dark fuscous-grey suffusion of the forewings; in form of markings most resembling *H. thalassinana;* the forewings are very markedly elongate.

Taken rather commonly by Mr. G. H. Raynor near Melbourne.

2. Hol. perspectana, *Walk.*

(*Grapholita perspectana*, Walk., Brit. Mus. Cat. 393.)

♂ ♀. 5½‴-6½‴. Head and thorax ashy-whitish, with a few black scales. Palpi light ashy-grey, beneath and internally white, second joint with a blackish band near apex. Antennæ grey. Abdomen in male dark grey, in female ochreous-grey. Legs whitish, anterior and middle tibiæ and all tarsi ringed with dark fuscous. Forewings narrow, costa hardly arched, hindmargin oblique, hardly rounded; whitish, with numerous irregular very oblique grey strigulæ; costa with several broader very oblique blackish strigulæ; a more or less distinct subquadrate blackish oblique blotch on inner margin near base, its apex tending to be suffusedly produced posteriorly; a narrow very oblique blackish streak from inner margin before middle, anteriorly suffused, posteriorly sharply defined, its apex somewhat curved outwards, extending to disc above middle at three-fourths from base; a small oblique, blackish-grey triangular spot on anal angle, not reaching half across wing; a short oblique cloudy blackish-grey streak from apex, anteriorly suffused and almost meeting the oblique streak from inner margin; cilia with basal half white irregularly barred with blackish-grey, outer half light grey. Hindwings light grey, thinly scaled towards base; cilia grey-whitish, with a suffused grey line near base.

Very similar to *H. thalassinana*, but always larger and less variable; distinguished by the extreme obliqueness of the markings, and the length of the blackish streak from inner margin before middle, which extends along the disc uninterruptedly to three-fourths from base.

Very common amongst *Leptospermum* scrub from September to February, and I have taken it in May; it occurs round Sydney and Wollongong, in New South Wales; at Melbourne and Brisbane; and at Brighton in Tasmania.

3. Hol. thalassinana, *n. sp.*

♂ ♀. 4‴-5¼‴. Head and thorax whitish, thorax mixed with grey on back. Palpi whitish, second joint with a blackish spot in middle and a blackish band towards apex. Antennæ grey. Abdomen in male dark grey, with whitish anal tuft, in female ochreous-grey. Legs white, anterior and middle tibiæ and tarsi with slender dark fuscous rings. Forewings narrow, costa hardly arched, hindmargin oblique, hardly rounded; dull white, with fine very oblique grey strigulæ, in male almost entirely suffused with light grey; costa with several broader oblique blackish strigulæ; a small oblique subquadrate dark fuscous-grey blotch on inner margin near base, anteriorly suffused; a straight oblique moderately broad dark fuscous-grey streak from inner margin before middle, anteriorly suffused, posteriorly generally sharply defined, reaching half across wing, truncate above, sometimes obsolete towards inner margin; generally two dark fuscous-grey linear dots, longitudinally placed, beyond this above middle, not connected; a rather broad oblique triangular dark fuscous-grey spot on anal angle, reaching half across wing, sometimes obscured by a greyish suffusion towards hindmargin; sometimes a dark fuscous-grey spot towards apex; cilia with basal half white barred with black, outer half light grey. Hindwings grey or light grey, thinly scaled towards base; cilia whitish, with a faint grey line near base.

Closely allied to *H. perspectana*, but smaller and greyer, with markings variable in intensity, but less well defined than in *H. perspectana* as a rule; the streak from inner margin before middle less oblique and extending only to middle of disc, its apex followed by two linear marks with which it is not connected.

Larva rather stout, pale green, head pale brown; feeding in spun-up shoots of *Leptospermum lævigatum (Myrtaceæ)*, growing on coast sand-hills.

Abundant amongst its foodplant on sand-hills near the sea, at Sydney and Newcastle, New South Wales, from December to February; the larvæ were found in January, and imagos were bred from them the same month.

4. Hol. quietana, *n. sp.*

♀. 5½″. Head and palpi wholly white. Antennæ grey. Thorax white, irregularly suffused with black. Abdomen grey. Legs white, anterior and middle tibiæ and tarsi narrowly ringed with dark fuscous. Forewings narrow, costa slightly arched, apex slightly produced, hindmargin oblique, hardly rounded; whitish, very finely sprinkled with grey, upper half suffused with grey except along costa towards base; costa finely and obliquely strigulated with dark grey; a small somewhat oval dark fuscous-grey spot in disc below middle, midway between base and apex, connected above with the grey suffusion; a slight greyish suffusion towards anal angle, containing a blackish dot below middle above anal angle, and two or three scattered black scales above it: cilia white, irrorated with grey towards extremities, with a strong black apical dash. Hindwings light grey, darker along hindmargin, more whitish-grey and thinly scaled towards base; cilia whitish, with a faint grey line.

The male of this species is unknown to me, but in neuration and superficial characters it agrees with this genus, in which it is easily recognisable by the grey costal and white dorsal halves of the forewings. It has a superficial resemblance to *Streps. seditiosana*, from which it may be known by the wholly white head and palpi, the tuft of the palpi, and the absence of a dark longitudinal streak on forewings from base.

I took one specimen amongst scrub near Brisbane, in September.

5. Hol. biscissana, *n. sp.*

♂ ♀. 3½‴-4‴. Head and thorax whitish mixed with grey. Palpi whitish, tuft of second joint grey towards extremity. Antennæ grey. Abdomen dark grey. Legs whitish, anterior and middle tibiæ and tarsi ringed with dark fuscous. Forewings narrow, costa slightly arched, apex somewhat produced, hindmargin sinuate; whitish, coarsely irrorated with grey scales, tending to form iregular hardly oblique strigulæ; costa obliquely strigulated with blackish; a small irregular dark fuscous grey spot in disc below middle at one-third from base, and a similar one below middle at two-thirds from base; from posterior half of costa run two or three very oblique dark grey lines to hindmargin above middle, the first of which tends to enclose with the second discal spot a round whitish patch on anal angle; a blackish apical dot; cilia whitish, becoming grey posteriorly, crossed by a blackish spot at apex. Hindwings grey; cilia grey, at base whitish.

A distinct species, characterised by its small size, the coarse and not oblique strigulation of forewings, and the two well-marked dark discal spots at one-third and two-thirds from base.

Five specimens, taken amongst low scrub near Sydney and on the Bulli Pass, New South Wales, in October and January.

15. Bathrotoma, *n. g.*

Thorax smooth. Antennæ in male ciliated, with an excavated notch immediately above basal joint. Palpi moderate, porrected, second joint rough-haired beneath and towards apex above, terminal joint distinct. Posterior tibiæ fringed with hairs above. Forewings elongate, narrow, costa in male with a strong basal fold, almost straight, hindmargin sinuate. Hindwings trapezoidal, broader than forewings, posterior angle prominent, apex produced. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 coincident, 5 approximated to 4 at base, 6 and 7 stalked.

Belongs to the group of *Strepsiceros;* distinguished from *Strepsiceros* by the stalking of veins 6 and 7 of hindwings, and the position of the notch immediately above basal joint of antennæ, from *Tmetocera* by the costal fold of male, from *Hendecasticha* by the 12 veins of forewings; the peculiarly shaped prominent-angled hindwings are a special feature.

Of the three species described below, only the first two belong truly to this genus; the third, *B. scopulosana*, is only known to me in the female, and is placed provisionally in this genus, to which it has an evident affinity, until the male is known; but it is discordant in the separation of veins 6 and 7 of hindwings, and cannot remain here.

The three species described may be thus separated:

a. Forewings with a subquadrate dark blotch on inner margin at one-third.
  1. Dorsal spot beyond middle erect, triangular 1. constrictana.
  2. Dorsal spot beyond middle flattened, semi-oval .. ..3. scopulosana.
b. Forewings without dark dorsal blotch ..2. ruficomana.

1. Bathr. constrictana, *n. sp.*

♂ ♀. *5‴-6¼‴*. Head ochreous-brown on crown and face, behind whitish finely irrorated with grey. Palpi deep ochreous-brown.

Antennæ dark fuscous. Thorax white, irrorated with grey, anterior margin and one or two spots on back blackish. Abdomen ochreous-grey, anal tuft of male ochreous. Legs whitish, anterior and middle tibiæ and tarsi banded with dark fuscous. Forewings very narrow, costa almost straight, hindmargin sinuate below apex, slightly oblique; white, very finely irrorated with grey scales, tending to form very fine strigulæ, especially along costa, where they cause a narrow greyish suffusion; costa rather obliquely and coarsely strigulated with blackish, and inner margin also generally with a few short blackish strigulæ; a small grey blackish-margined somewhat triangular spot on inner margin close to base, reaching two-thirds across wing; a rather large subquadrate erect dark grey blotch, mixed with blackish, on inner margin at one-third, reaching half across wing, rather ill-defined anteriorly; a small triangular dark grey spot on inner margin about three-fourths, reaching one-third across wing; a small blackish apical spot, slenderly produced along hindmargin nearly to anal angle: cilia dark fuscous with a blackish basal line, beneath anal angle whitish and becoming grey posteriorly. Hindwings thinly scaled, grey, somewhat darker at apex; cilia grey-whitish, with an indistinct grey line near base.

Distinctly characterised by the white forewings, dark grey dorsal spots, and ochreous-brown head.

Rather common at rest on certain fences near Sydney, and at Parramatta, and also beaten from a species of *Melaleuca;* it occurs from September to November, and in January.

2. Bathr. ruficomana, *n. sp.*

♂ ♀. 4¾″-5¾″. Head reddish-ochreous on crown and face, behind light ashy-grey. Palpi deep reddish-ochreous. Antennæ grey. Thorax grey, more or less suffused with dark fuscous. Abdomen ochreous-grey, in male suffused with yellowish-ochreous. Legs grey-whitish, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous. Forewings very narrow, costa straight, hindmargin slightly sinuate, hardly oblique; light grey, with very fine whitish transverse strigulæ; a darker grey suffusion towards costa, attenuated posteriorly and ceasing before apex, in male more blackish-grey and more distinct; costa obscurely strigulated with dark grey; the veins obscurely indicated by irregular longitudinal dark grey lines; a hardly paler patch on anal angle, preceded and followed by an obscure leaden-metallic line, and containing a row of four or five ill-defined blackish dots; a small blackish apical spot, slenderly produced along hindmargin nearly to anal angle: cilia reddish-ochreous, with a black basal line, beneath anal angle whitish mixed with grey. Hindwings thinly scaled, grey, darker posteriorly; cilia grey, with a whitish basal line.

In form of wing closely resembling the preceding, but the forewings are grey, without any trace of dark dorsal spots, the cilia and head reddish-ochreous.

Four specimens, (one male, three females) taken at rest on a fence in Sydney, in December and January.

3. Bathr. (?) scopulosana, *n. sp.*

♀. 6½″. Head ochreous-whitish, between antennæ dark grey. Palpi whitish-ochreous, mixed with grey beneath. Antennæ grey-whitish, suffusedly annulated with dark fuscous. Thorax whitish-ochreous, with a few black scales, and with a grey spot mixed with blackish behind. Abdomen dark fuscous. Legs ochreous-whitish, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous. Forewings moderately narrow, costa slightly arched, hindmargin sinuate below apex, slightly oblique; whitish-ochreous, somewhat suffused with brownish-ochreous posteriorly, and with a few scattered black scales; costa finely and obliquely strigulated with blackish; a subquadrate blotch on inner margin about one-third, black on inner margin, becoming ochreous-brown and shading gradually into groundcolour above, reaching half across wing, blackmargined on each side, outer edge indented below middle, and connected with costa at one-fourth by an irregular inwardly oblique blackish line; between this blotch and base the inner margin is narrowly blackish; an elongate very narrowly semi-ovate blackish-fuscous spot along inner margin from beyond middle to beyond three-fourths, posteriorly whitish-margined; a roundish patch on anal angle is indistinctly indicated by a slender interrupted blackish boundary line, and contains a row of four or five ill-defined linear blackish dots; a small ferruginous apical spot; a row of linear black dots along hindmargin: cilia ochreous-fuscous, with a blackish spot above apex, and three broadly suffused blackish bars below apex, with a whitish line along base, towards anal angle wholly grey mixed with whitish. Hindwings dark grey, very thinly scaled and almost transparent towards base; cilia whitish, with an indistinct grey line near base.

Markings placed much as in *B. constrictana,* but groundcolour tinged with ochreous, no dorsal spot close to base, spot at one-third brown above, spot at three-fourths flattened, elongate, semi-ovate, and head not brown.

Two specimens taken at rest on fences near Sydney and Parramatta, in October.

16. STREPSICEROS, *n. g.*

Thorax smooth. Antennæ in male ciliated, with an excavated notch at about one-fifth from base. Palpi moderate, porrected, second joint roughly haired, often with a more or less dense tuft beneath towards apex, terminal joint more or less concealed. Posterior tibiæ fringed with hairs above. Forewings elongate, narrow, costa in male with a strong basal fold, gently arched, apex generally somewhat produced, hindmargin more or less sinuate. Hindwings elongate-trapezoidal, broader than forewings apex somewhat produced. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell distinct. Hindwings with veins 3 and 4 long-stalked or coincident, 5 closely approximated at base to 4, 6 and 7 separate.

Larva sixteen-legged, feeding in spun-up shoots or between joined leaves of the *Myrtaceæ*.

This genus is the type of a group which is rather extensively represented in the Australian region, compared with the other groups of the family. The other known genera belonging to this group are *Tmetocera*, *Bathrotoma*, and *Hendecasticha*, the whole being characterised by the possession of a sharply excavated semicircular notch on the stalk of the antennæ of male; the antennæ of the female are simple. *Tmetocera* is the only genus found in Europe, and is distinguished from all the others by the absence of a costal fold in male. *Strepsiceros* differs from *Bathrotoma* in the separation of veins 6 and 7 of hindwings, and the position of the notch on the antennæ, which is remote from the basal joint; from *Hendecasticha* in the twelve-veined forewings. The genus is subject to variation in the structure of veins 3 and 4 of hindwings, which are sometimes on a long stalk, sometimes wholly coincident, so that there appear to be only seven veins; and in the palpi, which have often, but not always, a tuft beneath on the second joint; but these forms are connected by intermediate gradations, and are not available for generic characters. The species are generally small grey inconspicuous insects, with very similar markings.

There are eleven Australian species known to me, of which two occur in New Zealand also, and appear to be indigenous there, equally as in Australia. The following is a tabulation of them:

A. A broad white streak along part or whole of costa.
  1. Costal streak extending from base to apex.
    a. Costal streak interrupted before middle 9. plinthinana.
    b. Costal streak entire .. .. ..10. obeliscana.

2. Costal streak extending from base to one-third .. .. 4. seditiosana.
3. Costal streak extending from before middle to apex .. ..11. sicariana.

B. Costa not broadly white.
1. A white subcostal streak.
a. Subcostal streak extending from base to apex .. .. 8. zopherana.
b. Subcostal streak extending from middle to apex .. .. 7. sollicitana.
2. A white central longitudinal suffused streak only .. .. 6. fluidana, ♂.
3. No white longitudinal markings.
a. Forewings reddish-ochreous .. .. 6. fluidana, ♀.
b. Forewings grey or dark fuscous.
i. A slender white transverse streak posteriorly .. .. 5. pericyphana.
ii. No white markings.
*. Forewings light, with well-defined entire dark central fascia .. 1. limnephilana.
**. Forewings dark or mottled, without entire fascia.
†. Forewings somewhat dilated, with broad dark suffused central streak.. .. .. 2. ejectana.
††. Forewings elongate, without central streak.. .. .. 3. macropetana.

1. Streps. limnephilana, *n. sp.*

♀. 6‴-6½‴. Head, palpi, and thorax light ashy-grey, slightly mixed with fuscous. Antennæ grey. Abdomen grey, extremity whitish. Legs grey-whitish, anterior and middle tibiæ and all tarsi banded with dark fuscous. Forewings moderate, posteriorly dilated, costa moderately arched, hindmargin nearly straight, oblique; whitish, finely and densely irrorated with ashy-grey; costa with a few short blackish strigulæ; some blackish scales towards inner margin near base; outer edge of basal patch indicated by an obscure blackish transverse line at one-third, in one specimen forming a short erect ochreous-fuscous black-margined streak from inner margin, reaching one-third across wing; central fascia narrow, oblique, ochreous-fuscous irregularly margined with black, suffused with black in middle and on inner margin, running from middle of costa to inner margin before anal angle; a blackish streak from apex along upper half of hindmargin: cilia ashy-whitish, with two faint grey lines, and obscurely barred with blackish. Hindwings fuscous-grey; cilia whitish, with two suffused grey lines.

The male being as yet unknown, it is not certain whether the species is correctly referred to this genus, but the general similarity to *S. ejectana*, and the identity of all non-sexual characters, are sufficient to warrant its position. The male may perhaps have a tuft of raised scales on the forewings, as in *S. ejectana*, and may also differ somewhat in marking. The female may be easily known from *S. ejectana* by the clearer and lighter groundcolour, and the well-defined entire central fascia, which in *S. ejectana* is partial and suffused, as well as by the absence of the dark fuscous longitudinal streak.

Five specimens, all females, taken on open swampy ground at Waratah on the Hunter River, New South Wales, in January.

2. Streps. ejectana, *Walk.*

(*Sciaphila ejectana*, Walk., Brit. Mus. Cat., 350; (?) *Sciaphila absconditana*, ibid. 351; *Sciaphila servilisana*, ibid. 356; *Sciaphila saxana*, ibid. 357; *Conchylis ligniferana*, ibid. 363).

♂ ♀. 5¾"-7". Head, palpi, and thorax grey irrorated with ashy-whitish, and with a few black scales, shoulders ochreous-tinged; palpi not tufted. Antennæ dark fuscous, in male thickened and notched at one-fifth from basal joint. Abdomen grey. Legs whitish-grey, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous-grey. Forewings moderate, slightly dilated posteriorly, costa gently arched, hindmargin nearly straight, oblique; light ashy-grey, with a few scattered black scales, in male more or less wholly suffused irregularly with dark grey, especially towards costa and hindmargin; costa and inner margin coarsely strigulated with blackish; a strong tuft of raised scales in male towards inner margin at one-third from base; a cloudy irregular somewhat sinuate broad dark fuscous longitudinal streak in disc, mixed with ochreous and blackish, extending from near base to beyond middle, thence bent downwards to inner margin before anal angle; in male this streak is more or less obscured through the general dark suffusion; an ill-defined triangular dark fuscous blotch on upper half of hindmargin, its apex extending inwards to disc at three-fourths, sometimes ochreous-tinged, in male often cloudy and suffused, especially beneath, generally containing two or three longitudinal black streaks: cilia grey, mixed with whitish points, irregularly and indistinctly barred with blackish. Hindwings dark grey; cilia grey, with a dark grey line near base; veins 3 and 4 long-stalked.

The markings of this species are very obscure and confused, especially in the male, but it cannot well be mistaken for any other; it is comparatively the broadest-winged species of the genus, and the raised tuft of scales on forewings in male is a peculiar character; its dark cloudy colouring, and the absence of any white markings distinguish it from all but the much narrower-winged and differently marked *S. macropetana*, and the more clearly marked *S. limnephilana*.

Larva cylindrical, active, dull green, more yellowish on sides and towards extremities, dorsal spots paler; head and second segment, or posterior half of second segment, black. Feeds amongst spun-together shoots of *Kunzea capitata* and *Darwinia* *fasciculata (Myrtaceæ)*, and probably other plants of the same order, in December, January, and doubtless other months.

Extremely abundant in the bush round Sydney, readily disturbed and very active, especially towards sunset, almost without intermission from July to March; occurs also at Melbourne; and I took it not uncommonly at Wellington and Hamilton, New Zealand, in January, frequenting a shrub which I believe to be *Leptospermum ericoides*. The New Zealand specimens do not differ perceptibly from Australian, except in being slightly smaller than the average; and there seems no reason to suppose that the species has been artificially introduced from either country into the other.

3. Streps. macropetana, *n. sp.*

♂ ♀. 7″-8¾″. Head, palpi, and thorax light ochreous-grey, mixed with dark grey and dark fuscous; palpi not tufted. Antennæ dark fuscous, in male thickened and notched at one-eighth from basal joint. Abdomen grey, segmental margins ochreous-whitish. Legs ochreous-whitish, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous. Forewings elongate, narrow, costa gently arched, hindmargin nearly straight, very oblique; ashy-grey, variable in depth, finely and closely irrorated with whitish; costa finely and obliquely strigulated with blackish-grey; numerous indistinct dark grey longitudinal strigulæ in disc, towards hindmargin more distinct and forming connected lines; often there is a faint irregular ochreous suffusion, especially towards middle of disc; two or three raised scales near inner margin towards base; often a slender oblique anteriorly suffused black streak from inner margin at one-third, reaching half across wing, frequently interrupted or obsolete; often a small indistinct dark fuscous triangular spot on inner margin before anal angle; between this and the oblique streak at one-third the ground colour is often paler, forming an irregularly oblong patch; sometimes a small cloudy dark grey triangular patch on upper half of hindmargin, darkest towards apex; a row of three or four black linear dots near hindmargin above anal angle, preceded and followed by a faint leaden-metallic line: cilia grey, irregularly mixed with blackish, and irrorated with whitish points. Hindwings thinly scaled, grey, darker at apex; cilia grey-whitish, with a grey line near base; veins 3 and 4 long-stalked.

The largest species of the genus, with very elongate forewings; variable, but generally very uniform in colouring, with very few darker markings, of various character in different specimens.

Larva cylindrical, with scattered hairs; rather pale yellowish-green, above rather darker dull green, dorsal spots faintly whitish; head amber, second segment rather lighter amber; anal segment with slight indications of a black plate. Feeds between joined leaves of *Eucalyptus sp.*—, in June.

A common species, occurring amongst *Eucalyptus* scrub round Sydney and Parramatta, at Bulli, Blackheath on the Blue Mountains, and Newcastle, in New South Wales; at Melbourne, and near Duaringa, Queensland; from July to October, and from January to March.

4. Streps. seditiosana, *n. sp.*

♂ ♀. 4¾"-5¼". Head, palpi, and thorax grey, densely irrorated with whitish; palpi not tufted. Antennæ dark fuscous, in male thickened and notched at one-fifth from basal joint. Abdomen grey. Legs grey-whitish, anterior and middle tibiæ and all tarsi suffusedly ringed with dark fuscous. Forewings narrow, costa slightly arched, hindmargin somewhat sinuate, oblique; dull whitish, costal half suffused with dark grey (in female slightly ochreous-tinged) except along basal third of costa and towards apex; costa shortly strigulated with dark fuscous; a dark fuscous strongly marked central streak from base to middle, posteriorly abruptly attenuated and somewhat bent upwards, posterior edge blackish and sharply defined; an ill-defined grey suffusion about anal angle, and another on hindmargin beneath apex; a silvery-metallic line from anal angle reaching half across wing, and another near hindmargin extending to costa before apex: cilia grey, whitish towards base, with a blackish spot at apex. Hindwings very thinly scaled, grey, darker posteriorly; cilia whitish-grey, with an indistinct darker line near base; veins 3 and 4 stalked.

A distinct species, sufficiently characterised by the dark central longitudinal streak from base to middle.

Three specimens (one male, two females) taken in low scrub at Sydney and above the Bulli Pass, New South Wales, from August to October.

5. Streps. poricyphana, *n. sp.*

♂. 4¼"-4¾". Head white, mixed with dark grey above. Palpi somewhat tufted, white, with a dark fuscous spot near base, and a dark fuscous band towards apex of second joint. Antennæ grey, in male abruptly swollen and notched at about one-fifth from basal joint. Thorax blackish, mixed with reddish-ochreous on sides. Abdomen ochreous-grey. Legs whitish, anterior and middle tibiæ and all tarsi sharply and narrowly ringed with dark fuscous. Forewings very narrow. costa nearly straight, hindmargin sinuate, oblique; blackish-fuscous, mixed with ochreous-brown, and coarsely irrorated with white; costa with white obscure strigulæ arranged in pairs; two ill-defined white angulated strigulæ crossing wing near base; two or three short oblique white strigulæ near together on inner margin before middle; an irregularly sinuate snow-white streak crossing wing from near costa at three-fourths to anal angle, angulated inwards about middle, preceded on inner margin by a small somewhat triangular dark fuscous anteriorly whitish-margined spot; in this white streak are several faint leaden-metallic spots on its posterior edge, and there is an obscure leaden-metallic line near hindmargin; cilia white, outer half grey irrorated with blackish. Hindwings very thinly scaled, grey; cilia grey.

This small species is of peculiar appearance, and very distinct from any other, being characterised by its small size, very narrow forewings, dark colouring, and the pure white transverse streak posteriorly.

Three specimens taken at rest on a fence near Sydney, in October. In repose the apex of the forewings is obliquely bent in round the abdomen, as though deformed; a habit which is not perceptible in any other species of the genus, but is similar to that noticed in the case of *Helictophanes uberana.*

6. Streps. fluidana, *n. sp.*

4″-5″. ♂. Head and thorax white, more or less sprinkled with ochreous and grey. Palpi white, second joint tufted, tuft dark grey towards extremity. Antennæ grey, in male thickened and notched at about one-fourth from basal joint. Abdomen ochreous-whitish, indistinctly suffused with grey towards base of segments. Legs white, anterior and middle tibiæ and all tarsi ringed with dark fuscous. Forewings narrow, costa slightly arched, apex produced, hindmargin sinuate, obliquely rounded beneath; grey, densely irrorated with white, and more or less suffused posteriorly with reddish-ochreous; along the costa the grey alternates with the white to form coarse oblique strigulæ; a more or less distinct narrow central longitudinal white streak from base, almost reaching anal angle, but posteriorly dilated and suffused, sometimes crossed by ill-defined strigulæ; sometimes a dark grey spot on submedian fold before middle; a row of four or five sharply-defined linear black dots near lower half of hindmargin, preceded and followed by a silvery-metallic line, the second metallic line extending to costa before apex; apex and hindmargin beyond this line reddish-ochreous: cilia white on costa, grey on hindmargin, with a black spot at apex, and a white basal spot on middle of hindmargin. Hindwings thinly scaled, grey; cilia grey-whitish. with a faint grey line near base; veins 3 and 4 on a very long stalk.

♀. Head, palpi, &c., as in male; thorax partially suffused with reddish-ochreous. Forewings more elongate than in male, wholly reddish-ochreous, sprinkled with grey-whitish; costa very narrowly white, and posteriorly with short oblique white strigulæ; two or three blackish scales on inner margin; the silvery-metallic lines and black dots above anal angle as in male; cilia as in male. Hindwings as in male.

Easily distinguished from its allies by the reddish-ochreous partial suffusion towards hindmargin in male, and the wholly reddish-ochreous forewings of female; nearest to *S. sollicitana*, but differing from it and the other allied species by the absence of any white costal or subcostal streak.

Larva undescribed; feeding in spun-up shoots of *Leptospermum lanigerum* (*Myrtaceæ*), in October (and doubtless other months).

Abundant amongst its foodplant, flying out in numbers when disturbed, round Sydney, and at Bulli, and Blackheath on the Blue Mountains, from August to March.

7. Streps. sollicitana *n. sp.*

♂ ♀. 3½"-5". Head and thorax white, sides suffused with grey. Palpi white, second joint tufted beneath, tuft more or less suffused with grey towards extremity. Antennæ dark grey, in male thickened and notched at about one-fifth or one-sixth from basal joint. Abdomen grey, segmental margins and anal tuft of male silvery-whitish. Legs whitish, anterior and middle tibiæ and all tarsi ringed with dark fuscous. Forewings very narrow, costa slightly arched, apex rather produced, hindmargin sinuate, rather oblique; rather dark grey, densely irrorated with white; along the costa the dark grey alternates with the white to form oblique coarse strigulæ; a rather broad white longitudinal streak rather above middle from base to middle of disc, dilating gradually, ill-defined at extremity; a rather narrow white longitudinal streak beneath costa from middle to apex, generally interrupted at half its length by a very oblique grey line; a slender blackish-grey oblique streak from inner margin at one-third, reaching half across wing, forming a small spot above submedian fold; between this and base are several blackish-grey transverse strigulæ, not crossing the white longitudinal streak; a faint silvery-metallic mark above anal angle, and a faint silvery-metallic line near hindmargin; a small black apical spot, above which is a snow-white spot in cilia: cilia dark grey, with a blackish spot at apex, and a white spot at base on middle of hindmargin. Hindwings rather thinly scaled, grey, apex dark grey; cilia light grey, with a dark grey line near base; veins 3 and 4 coincident.

Allied to *S. fluidana*, but without any ochreous colouring, and with a white subcostal streak from middle to apex.

Six specimens taken amongst low scrub near Sydney and Parramatta, in October, December, and January.

8. Streps. zopherana, *n. sp.*

♂ ♀. 5″-6″. Head, palpi, and thorax grey, more or less irrorated with white, head sometimes almost wholly white; palpi not tufted. Antennæ dark fuscous, in male somewhat thickened and notched at about one-eighth from basal joint. Abdomen dark grey, segmental margins silvery-whitish. Legs whitish, anterior and middle tibiæ and all tarsi sharply banded with dark fuscous. Forewings very narrow, costa slightly arched, apex produced, hindmargin sinuate, very oblique; dark grey, irrorated with whitish; costa very obliquely strigulated with blackish-grey; a rather broad ill-defined white streak beneath costa from base to apex, crossed by an oblique dark grey fascia-like streak before middle, and three or four slender dark grey very oblique strigulæ between that and apex; middle of disc somewhat suffused with blackish; an ill-defined black spot in disc above anal angle; generally a row of about three ill-defined black spots above anal angle towards hindmargin, preceded and followed by an obscure silvery-metallic line: cilia dark grey, paler towards anal angle, with a blackish apical spot, costal cilia white. Hindwings thinly scaled, grey, darker at extremity; cilia pale grey, with an indistinct darker line near base; veins 3 and 4 coincident.

Distinguished from all others by the white subcostal streak from base to apex, but variable in intensity of colouring.

Four specimens taken in the scrub near Sydney in December; I found the species very abundant amongst, I believe, *Leptospermum ericoides*, near Dunedin, and also took it at Hamilton and and Wellington, in New Zealand during January. The New Zealand specimens do not differ from the Australian; the species is evidently at home in New Zealand, but appears to be scarce in Australia, and it is possible that it may have been artificially introduced thither.

9. Streps. plinthinana, *n. sp.*

♂. 6‴. Head and thorax white, with a few grey scales. Palpi rather elongate, somewhat tufted beneath, white, the hairs greyish-tinged towards extremities. Antennæ grey, in male notched at about one-eighth from basal joint. Abdomen ochreous-grey. Legs whitish, anterior and middle tibiæ and all tarsi suffusedly banded with dark fuscous. Forewings narrow, costa gently arched, apex produced, hindmargin sinuate, rather oblique; dark reddish-fuscous, coarsely irrorated and suffused with white, especially towards anal angle; a broad well-defined white streak along costa from base to apex, posteriorly attenuated, crossed by an oblique dark reddish-fuscous fascia-like streak before middle; costal edge strigulated finely with brownish-grey, one or two of the strigulæ towards apex crossing the white streak; some irregularly placed blackish scales beneath the white streak posteriorly: cilia light reddish-fuscous, becoming whitish towards anal angle, extremities greyish-tinged, with a dark fuscous apical spot, costal cilia white. Hindwings thinly scaled, grey; cilia light grey, with a faint darker line near base.

Nearly allied to *S. zopherana*, but forewings somewhat broader, and characterised by the general reddish tint, and costal, not subcostal, white streak.

One specimen taken at Parramatta in November.

10. Streps. obeliscana *n. sp.*

♂ ♀. 5‴-6‴. Head dull white, greyish-tinged on sides. Palpi elongate, not tufted, white, sometimes externally greyish-tinged. Antennæ grey, in male slightly thickened, and notched at about one-tenth from basal joint. Thorax grey, suffused with white on back. Abdomen whitish, tinged with ochreous grey towards base of segments. Legs whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous-grey. Forewings narrow, costa gently arched, hindmargin sinuate beneath apex, very oblique; rather light grey, slightly brownish-tinged, irrorated with whitish, especially towards inner margin; a broad white costal streak from base to apex, attenuated posteriorly, sharply-defined beneath, costal edge irrorated and sometimes in male suffused with brownish-grey towards base, towards apex with slender oblique brownish-grey strigulæ, of which two or three cross the white streak; the lower margin of the white streak is indented by a short tooth of the groundcolour before middle, beyond this irregularly margined by a blackish line; a sharply-defined small black spot above anal angle, beyond which is a small oval space preceded and followed by a silvery-metallic line, and sometimes enclosing two or three black dots; cilia brownish-grey, mixed with whitish towards anal angle, with a blackish apical spot, costal cilia white. Hindwings thinly scaled, in male whitish-grey, in female pale grey; cilia in male white, in female whitish, with a faint darker line near base.

Distinguished from all by the broad uninterrupted white costal streak from base to apex, and light grey groundcolour.

Abundant amongst *Leptospermum* scrub, generally in sandy places, round Sydney and at Parramatta, from August to December.

11. Streps. sicariana *n. sp.*

♂. 7‴. Head white, with one or two grey scales. Palpi elongate, not tufted, white mixed with grey beneath, terminal joint dark grey. Antennæ grey, in male slightly thickened, and notched at about one-tenth from basal joint. Thorax white. Abdomen light silvery-grey, anal tuft whitish. Legs whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous-grey. Forewings moderately narrow, costa gently arched, hindmargin slightly sinuate beneath apex, very oblique; dark fuscous-grey, dorsal half suffusedly white sprinkled with grey; a sharply-defined fusiform white streak along costa from before middle to apex, acutely attenuated at each extremity, suffusedly margined beneath with blackish, costal edge with slender oblique brownish-grey strigulæ, of which two or three towards apex cross the white streak; an oblique blackish mark above submedian fold before middle; cilia white, extremities of hindmarginal cilia mixed with grey, with a black apical spot, and a dark grey smaller spot a little below it. Hindwings thinly scaled, grey; cilia whitish, with a faint grey line near base.

Allied to *S. obeliscana*, but very distinct from that species through its larger size, dark colour, and the white costal streak extending only from before middle to apex.

One specimen taken in dry scrub near Sydney in February.

17. HENDECASTICHA *n. g.*

Thorax smooth. Antennæ in male ciliated, with an excavated notch near base. Palpi moderate, porrected, second joint densely rough-haired above and below, terminal joint nearly concealed. Posterior tibiæ fringed with hairs above. Forewings elongate, narrow, costa in male with a basal fold, nearly straight, hindmargin sinuate. Hindwings elongate-trapezoidal, broader than forewings. Forewings with 11 veins, vein 7 running to costa, secondary cell indicated, upper basal fork of vein 1 nearly obsolete. Hindwings with veins 3 and 4 coincident, 5 approximated to 4 at base, 6 and 7 stalked.

Nearly allied to *Strepsiceros*, but distinguished from it and the other genera of the group by the possession of only 11 veins in the forewings, the normal veins 7 and 8 being probably coincident; in the neuration of the hindwings it resembles *Bathrotoma*.

The only species is from New Zealand.

1. Hend. æthaliana *n. sp.*

♂ ♀. 3¾″-4¾″. Head, palpi, thorax, and abdomen dark fuscous, sprinkled with ashy-whitish. Antennæ dark fuscous, in male notched a little above basal joint. Legs whitish-grey, all tibiæ and tarsi suffusedly banded with dark fuscous-grey. Forewings narrow, costa hardly arched, hindmargin slightly sinuate, very oblique; dark fuscous, coarsely irrorated with grey and ashy-whitish scales, especially on basal half and before apex, tending to form irregular transverse lines; sometimes there is an irregular ochreous suffusion towards inner margin before middle, and above anal angle: cilia dark fuscous sprinkled at base with ashy-whitish. Hindwings dark fuscous; cilia dark fuscous, with a blackish line at base.

I took this species rather commonly in January amongst rank grass and herbage on some swampy ground near Hamilton on the Waikato, New Zealand; its small size and dark colouring make it very inconspicuous on the wing.

Fam. III. CONCHYLIDÆ.

Lower median vein of hindwings not pectinated; vein 2 of forewings rising from posterior fourth of lower margin of cell.

This family appears to be very scantily represented in the Australian region by a few peculiar genera; none of the previously described genera have yet occurred. The four genera with which I am acquainted may be thus distinguished:

A. Veins 3 and 4 of hindwings remote at origin 1. Heliocosma.
B. Veins 3 and 4 of hindwings stalked or from a point.
  1. Palpi very long .. .. 2. Paramorpha.
  2. Palpi moderate.
    a. Forewings in male with a raised membranous ridge near base .. .. 4. Coscinoptycha.
    b. Forewings in male without membranous ridge .. .. 3. Oistophora.

1. Heliocosma, *n. g.*

Thorax smooth. Antennæ in male thickened, laterally compressed, pubescent. Palpi very long, straight, porrected, second joint roughly haired, attenuated, terminal joint long, exposed. Posterior tibiæ fringed with hairs above. Forewings elongate, somewhat dilated, costa in male simple, slightly arched, bent before apex, hindmargin obliquely rounded; surface with rough scales. Hindwings broader than forewings, rounded-ovate. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell indicated, vein 1 furcate at base. Hindwings with 8 veins, 3 and 4 remote at origin, 5 parallel to 4, 6 and 7 remote at origin, nearly parallel.

Larva sixteen-legged, case-bearing, feeding on flowers.

The species of this genus in superficial appearance nearly resemble *Conchylis*, but the genus differs widely from all others of the family in the remoteness of veins 3 and 4 of the hindwings at origin, these veins being from a point or stalked in all other described genera; it resembles *Paramorpha* in the structure of the palpi, and has the rough scales on the surface of the forewings in common with all the other Australian genera, and with the European *Phtheochroa*. The case-bearing habit of the larva is at present unique amongst *Tortricina*.

The two species are readily known:

a.	Forewings carmine, with white markings ..	1. rhodopnoana.
b.	Forewings whitish, with ochreous markings	2. incongruana.

1. Hel. rhodopnoana, *n. sp.*

♀. 7½‴. Head and palpi whitish-ochreous. Antennæ light brownish-ochreous. Thorax light ochreous-brown, shoulders tinged with carmine. Abdomen ochreous-grey, extremity ochreous. Legs ochreous-grey, anterior coxæ and femora carmine. Forewings rather narrow, triangular, costa straight, bent before apex, hindmargin slightly sinuate, oblique; bright carmine, deeper posteriorly, becoming ochreous-orange along inner margin towards base; a narrow oblique silvery-white anteriorly blackish-margined streak from inner margin at one-third, nearly reaching costa, its extremity uniting with apex of a slender ill-defined white streak from base beneath costa; a second narrow oblique silvery-white anteriorly black-margined streak from inner margin just beyond middle, reaching nearly to costa, the ground colour tinged with orange along its anterior edge; from middle of its posterior edge proceeds a much slenderer white anteriorly blackish-margined streak to inner margin a little before anal angle; between first and second white oblique streaks is a tuft of raised scales near inner margin, a slender crescentic outwardly concave white blackish-margined mark beneath costa a little before apex, and another similar rather larger mark beneath it and anal angle, not quite touching either; a silvery-white streak from apex along hindmargin, ending in a small dilated silvery-white anteriorly blackish-margined spot below middle of hindmargin: cilia carmine, with a white spot beneath apex and another below middle of hindmargin, between these two spots the basal third is carmine, central third white, apical third grey, extremities above apex dark grey. Hindwings pale ashy-grey, cilia whitish.

An extremely beautiful and distinct species, of which the male is as yet unknown.

One specimen taken by Mr. G. H. Raynor near Melbourne in November.

2. Hel. incongruana, *Walk.*

(*Conchylis incongruana*, Walk., Brit. Mus. Cat., 363; *Eromene apertella*, ibid. Suppl., 1762.)

♂ ♀. 5″-8″. Head, palpi, and thorax white, more or less suffused on sides with light brownish-ochreous. Antennæ whitish-ochreous, in male dilated and laterally compressed. Abdomen whitish-ochreous. Legs whitish, anterior and middle tibiæ and tarsi obscurely infuscated. Forewings moderately narrow, dilated, triangular, costa bent towards apex, hindmargin nearly straight, oblique; whitish, faintly and irregularly suffused with pale ochreous; a short ochreous-orange streak along costa at base; generally an ill-defined reddish-ochreous spot on submedian fold near base; a slender (in male almost linear) strongly marked ochreous-orange fascia parallel to hindmargin, running from slightly beyond middle of costa to middle of inner margin, which it does not quite reach, posteriorly black-margined, on its anterior edge towards inner margin are two tufts of raised scales; sometimes two or three blackish scales on inner margin before anal angle, and in disc above it; a short cloudy oblique blackish apical streak; in female a moderately narrow ferruginous hindmarginal band, extending along hindmargin from apex to anal angle, enclosing a small white spot on hindmargin below middle, anterior margin somewhat sinuate; between it and central fascia is often a cloudy ferruginous suffusion in disc, but in male both this and the hindmarginal band are wholly absent: cilia in male whitish, along base ochreous, extremities and a line before middle blackish, broadly interrupted below apex and beneath middle of hindmargin with whitish; cilia in female similar, but ochreous replaced by orange, and there is a dark ferruginous spot at apex, and an orange spot at anal angle. Hindwings in male pale grey, in female whitish-grey; cilia whitish.

In general appearance recalling the European *Conchylis straminea*, Hw.; the dissimilarity of the sexes is so singular that I long accounted them as distinct species.

The larva lives in a portable case composed of fragments of petals of the flowers on which it feeds, adding fresh pieces towards the mouth as it grows; these are at first white, but quickly become withered, and the whole case has a ragged appearance; the larva feeds on flowers of *Lysinema pungens* and *Epacris sp. (Epacrideæ)* in August;] from those found an imago was bred in October.

A common species, occurring round Sydney, and at Blackheath on the Blue Mountains, and also at Melbourne, in dry sandy scrub amongst its foodplants, from October to March.

(NOTE.—*Conchylis diemeniana*, Z., Hor. Soc. Ent. Ross. 1877, 138, if correctly referred to this family, would probably belong to *Heliocosma;* but I am inclined to doubt whether the species is referable to this neighbourhood at all; I have not however seen a specimen, nor does the description come near any of the *Tortricina* known to me. Zeller's description is taken from a single female type from Tasmania, without palpi, and the neuration does not seem to have been made out; it is therefore impossible to quote the species under any generic head, but it is very unlikely to be a true *Conchylis*. It may be briefly described as slaty-fuscous, with the head, thorax, and basal third of forewings pale yellow.)

2. PARAMORPHA, *n. g.*

Thorax smooth. Antennæ of male strongly ciliated. Palpi very long, straight, porrected, second joint roughly haired, attenuated, terminal joint long, exposed. Posterior tibiæ fringed with hairs above. Forewings elongate, narrow, costa in male simple, moderately arched, apex acute, hindmargin oblique; surface with raised scales. Hindwings rounded, elongate-ovate, broader than forewings. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell absent, upper fork of vein 1 obsolete. Hindwings with 6 veins, 3 and 4 stalked from posterior angle of cell, 5 from upper angle of cell to apex, 6 free.

This genus has a peculiar facies from the remarkably narrow and elongate forewings; in the structure of the palpi it resembles *Heliocosma*, but the singular neuration of the hindwings causes it to be classed with *Oïstophora* and *Coscinoptycha* as forming a peculiar and abnormal group, probably confined to the Australian region.

The two species (one Australian, the other from New Zealand) may be easily distinguished;

a. Forewings faint whitish-grey	..1. aquilana.
b. Forewings densely irrorated with dark grey	..2. adreptella.

1. Par. aquilana *n. sp.*

♂ ♀. 5¼″-6¼″. Head, antennæ, thorax, and abdomen white. Palpi white, beneath sharply dark fuscous. Legs whitish, anterior tibiæ and tarsi greyish-tinged. Forewings very narrow, costa gently arched, hindmargin nearly straight, very oblique; white, almost wholly suffused with faint pale grey except towards anterior half of costa, and with very fine scattered dark grey scales; five sharply defined very oblique short black strigulæ on costa between middle and apex, and one shorter (sometimes absent) on costa before middle; a large sharply defined black dot in disc at two-thirds from base, followed by some raised scales; a small tuft of raised scales before this, another below it, two others in a straight line between this lower one and the base at equal distances, and sometimes another obliquely above and beyond the anterior of these, each of these tufts generally immediately preceded by a small black dot; sometimes a faint grey angulated transverse line from four-fifths of costa to anal angle; a sharp black line along hindmargin: cilia white, faintly suffused with grey, with two indistinct grey lines. Hindwings whitish-grey; cilia whitish, with two very faint grey lines.

Readily known by its pale whitish colouring and black dots.

The imago frequents damp or swampy ground, flying low amongst the herbage; it occurs tolerably commonly round Sydney and Parramatta, and at Blackheath on the Blue Mountains (3,500 feet), in September, and again in February and March.

2. Par. adreptella *Walk.*

(*Gelechia adreptella* Walk., Brit. Mus. Cat. 654).

♂ ♀. 6½″-6¾″. Head, palpi, and thorax pale grey irrorated with whitish; palpi beneath sharply dark fuscous. Antennæ, abdomen, and legs whitish, anterior and middle pair infuscated. Forewings very narrow, costa gently arched, somewhat bent before middle, hindmargin straight, very oblique; light grey, more whitish towards base of costa, distinctly ochreous-tinged, and thickly irrorated with dark grey; a suffused black spot in disc at two-thirds from base; between this and base are about eight black dots in upper half of wing, irregularly arranged, tending to be followed by raised scales; two or three tufts of raised scales towards submedian fold; a very indistinct angulated transverse dark grey line from three-fourths of costa to anal angle; an ill-defined blackish line along hindmargin; cilia grey, with light points, and two indistinct dark grey lines. Hindwings whitish, towards apex pale grey; cilia whitish, with a suffused faint grey line near base.

Larger than *P. aquilana*, with the costa of forewings distinctly bent, and the groundcolour appearing much darker from the close irroration of dark grey scales, and distinctly ochreous-tinged; the black dots are also differently arranged.

Three specimens taken in the swampy forest near Cambridge and Hamilton, on the Waikato, New Zealand, in January. Walker's type is unset, but certainly referable to this species.

3. Oïstophora *n. g.*

Thorax smooth. Antennæ of male hardly thickened towards base, very finely ciliated. Palpi moderate, porrected, second joint very roughly haired above and below towards apex, terminal joint concealed. Posterior tibiæ thinly haired above. Forewings elongate, narrow, costa in male simple, moderately arched, apex acute, hindmargin oblique; surface with tufts of rough scales. Hindwings broader than forewings, apex rather produced; a very large expansible tuft of long hairscales towards base beneath lower median vein. Forewings with veins 7 and 8 separate, 7 running to hindmargin, secondary cell absent, upper basal fork of vein 1 obsolete (?). Hindwings with 6 veins, 3 and 4 short-stalked from posterior angle of cell, 5 from upper angle of cell to apex, 6 free.

Related to *Paramorpha*, but abnormal in facies; distinguishable by the short palpi, and especially by the large expansible tuft of hairs on the hindwings in both sexes.

1. Oïst. pterocosmana *n. sp.*

♂ ♀. 8‴-8½‴. Head and thorax white, slightly mixed with ochreous. Palpi white, beneath sharply dark fuscous. Antennæ whitish-ochreous. Abdomen whitish, anal tuft of male ochreous. Legs whitish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings very narrow, costa bent towards apex, hindmargin straight, very oblique; ochreous-whitish, irregularly irrorated with dark fuscous; costal edge blackish towards base; five short very oblique cloudy blackish strigulæ on costa between middle and apex, and one still shorter before middle; a tuft of raised scales beneath costa near base; two black dots obliquely placed in disc close to base; four or five tufts of raised scales in disc between one-fourth and middle, each preceded by a black or dark fuscous dot; two raised tufts transversely placed in disc beyond middle, preceded by cloudy blackish dots; a cloudy interrupted angulated blackish line from three-fourths of costa to anal angle; a sharply defined black line along hindmargin, tending to be interrupted on the veins: cilia whitish, with two broad indistinct grey lines. Hindwings whitish-grey or pale grey; cilia grey-whitish.

Two specimens, taken at Sydney and Melbourne respectively, in October.

4. COSCINOPTYCHA *n. g.*

Thorax smooth. Antennæ of male much thickened, dentate, strongly ciliated, basal joint swollen, of female slender, simple. Palpi moderate, porrected, second joint roughly haired above and below towards apex, terminal joint in male concealed, in female exposed. Posterior tibiæ smooth above. Forewings elongate, narrow, costa in male simple, nearly straight, bent before apex, hindmargin oblique; surface with tufts of raised scales, and in male with a membranous longitudinal ridge towards base. Hindwings broader than forewings, apex elongate, almost acute. Forewings with veins 7 and 8 separate, vein 7 running to hindmargin, secondary cell absent, upper basal fork of vein 1 obsolete. Hindwings with 6 veins, 3 and 4 in male from a point or short-stalked, in female long-stalked from posterior angle of cell, 5 from upper angle of cell to apex, 6 free.

This peculiar genus is well defined by the curious swollen bladder-like ridge on the forewings of male, the strongly dentate and ciliated antennæ of male, the rather short palpi, and the smooth posterior tibiæ; it is very abnormal in appearance.

1. Cosc. improbana *n. sp.*

♂ ♀. 6¾″-7½″. Head silvery-white. Palpi white, basal two-thirds of second joint sharply dark fuscous beneath. Antennæ in male fuscous, basal joint white; in female whitish. Thorax white, somewhat mixed with fuscous. Abdomen whitish. Legs whitish, anterior and middle tibiæ and tarsi broadly banded with dark fuscous. Forewings very narrow, costa somewhat bent close to base and a little before apex, almost sinuate in middle, hindmargin nearly straight, very oblique; white, in male with an irregular ochreous-grey suffusion towards margins; about seven irregularly placed black linear spots on costa; in male a raised longitudinal bladder-like membranous ridge, extending in disc from near base to two-fifths, its costal half clothed with white scales, dorsal half naked, pellucid, and shining; in female this is absent, but there is a small irregular blackish spot in disc at two-fifths; a grey cloudy spot on inner margin at two-fifths, extending half across wing, in male containing a transverse blackish mark, in female obscurely mixed with blackish; a rather broad grey transverse central suffusion, containing in male a short longitudinal black linear mark near middle, in female a small roundish black spot and some scattered black scales; a row of indistinct linear blackish spots along hindmargin: cilia whitish, suffused with grey, obscurely barred with darker. Hindwings thinly scaled, whitish, apex greyish-tinged; cilia whitish, faintly greyish-tinged round apex.

Of this curious species, which for some time I did not recognise as belonging to the *Tortricina*, I have three specimens (two males and one female), beaten from bushes of *Kunzea capitata* near Sydney, in December.

For convenience of reference, a list is here subjoined of the species described by Walker in the British Museum Catalogues under the head of *Tortricina;* the number given refers to the page of the Catalogue, and after each species is given its proper generic and specific name, as determined in the present and preceding papers.

Teras retractana, Walk., p. 288=*Cacœcia postvittana*, Walk., according to type, but not by description, which is unidentifiable.
,, *responsana*, Walk., p. 297=*Cacœcia responsana*.
,, *postvittana*, Walk., p. 297= ,, *postvittana*.
,, *dotatana*, Walk., p. 298= ,, *postvittana*.
,, *mersana*, Walk., p. 298=*Capua sp.*, but too worn to be recognisable.
,, *scitulana*, Walk., p. 298=*Cacœcia postvittana*.
,, *basialbana*, Walk., p. 299= ,, *postvittana*.
,, *similana*, Walk,, p. 300=*Anisogona similana*.
,, *secretana*, Walk., p. 300=*Cacœcia postvittana*.
,, *solana*, Walk., p. 300=*Dichelia solana*.
,, *miserana*, Walk., p. 301=*Cacœcia miserana*.
,, *canigerana*, Walk., p. 301= ,, *miserana*.
,, *immersana*, Walk., p. 302=*Cryptoptila immersana*.
,. *obliquana*, Walk., p. 302=*Cacœcia obliquana*.
,, *excessana*, Walk., p. 303= ,, *excessana*.
,, *oblongana*, Walk., p. 303= ,, *oblongana*.
,, *inaptana*, Walk., p. 304= ,, *oblongana*.
,, *incessana*, Walk., p. 304=*Arotrophora incessana*.
,, *spurcatana*, Walk., p. 305=*Cacœcia spurcatana*.
,, *biguttana*, Walk., p. 306= ,, *biguttana*.
,, *conditana*, Walk., p. 306=*Pyrgotis conditana*.
,, *servana*, Walk., p. 306; type worthless and not identifiable.
,, *semiferana*, Walk., p. 306=*Capua semiferana*.
,, *priscana*, Walk., p. 307, } types worthless and unrecognisable.
,, *antiquana*, Walk., p. 307, }
,, *congestana*, Walk., p.308. type too worn to be identified, perhaps=*Cacœcia spurcatana* or *C. excessana*.

Teras maoriana, Walk., p. 308; type represented by one unrecognisable forewing.

Pandemis secundana, Walk., p. 310=*Cacœcia postvittana*.

,, *mediana*, Walk., p. 311=*Anisogona similana*.

,, *consociana*, Walk., p. 311=*Cacœcia postvittana*.

,, *gavisana*, Walk., p. 312=*Pyrgotis gavisana*.

Cacœcia metaxanthana, Walk., p. 315=*Acroceuthes metaxanthana*.

,, *chrysophilana*, Walk., p. 315=*Aristocosma chrysophilana*.

Batodes jactatana. Walk., p. 317=*Cacœcia jactatana*.

Dichelia reversana, Walk., p. 321= ,, *postvittana*.

,, *fœdana*, Walk., p. 321= ,, *postvittana*.

,, *sobriana*, Walk., p. 322= ,, *postvittana*.

,, *retractana*, Walk., p. 322=*Dichelia* (?) *retractana*.

Tortrix magnana, Walk., p. 330=*Acropolitis magnana*.

,, *polygraphana*, Walk., p. 330=*Cacœcia polygraphana*.

,, *canana*, Walk., p. 331=*Acropolitis canana*.

,, *impletana*, Walk., p. 331=*Thrincophora impletana*.

,, *dolosana*, Walk., p. 331=*Acropolitis dolosana* (?).

,, *velutinana*, Walk., p. 332; type headless and mangled, probably not belonging to the *Tortricina*, unrecognisable.

,, *signigerana*, Walk., p. 332=*Acropolitis signigerana*.

,, (?) *innotatana*, Walk., 333; type lost, description unidentifiable.

Lophoderus lætiferanus, Walk., p. 336, belongs to the *Œcophoridæ (Tineina)*.

Sciaphila conjunctana, Walk., p. 348=*Asthenoptycha conjunctana*.

,, *disputana*, Walk., p. 349=*Dichelia disputana*.

,, *rudisana*, Walk., p. 349=*Acropolitis signigerana*.

,, *basiferana*, Walk., p. 350 belongs to the *Tineidæ (Tineina)*.

,, *ejectana*, Walk., p. 350=*Strepsiceros ejectana*.

,, *absconditana*, Walk., p. 351; type worn, unidentifiable, perhaps=*Streps. ejectana*.

,, *debiliana*, Walk., p. 351=*Cacœcia miserana*.

,, *sidneyana*, Walk., p. 352; type very worn, unrecognisable

Sciaphila inconcisana, Walk., p. 352; type worn to pieces, unrecognisable.

,, *projectana*, Walk., p. 352=*Acroceuthes metaxanthana.*

,, *comptana*, Walk., p. 353=*Scolioplecta comptana.*

,, *flexivittana*, Walk., p. 353=*Cacœcia jactatana.*

,, *transtrigana*, Walk., p. 354= ,, *spurcatana.*

,, *turbulentana*, Walk., p. 355= ,, *spurcatana.*

,, *fusiferana*, Walk., p. 355; type worn, unrecognisable.

,, *detritana*, Walk., p. 356; worn, prob.=*Capua semiferana.*

,, *servilisana*, Walk., p. 356; mangled,=*Strepsiceros ejectana*

,, *spoliatana*, Walk., p. 356; type worn to pieces, unidentifiable.

,, *infimana*, Walk., p. 357; type very worn, unidentifiable.

,, *saxana*, Walk., p. 357=*Strepsiceros ejectana.*

Olindia vetustana, Walk., p. 358; type doubtfully identifiable, not recognised.

Conchylis incongruana, Walk., p. 363=*Heliocosma incongruana.*

,, *ligniferana*, Walk., p. 363=*Strepsiceros ejectana.*

,, *divulsana*, Walk., p. 364; type in fragments, unidentifiable, perhaps=*Dich. fusciceps.*

,, *fuscicepsana*, Walk., p. 364=*Dichelia fuscicepa.*

,, *tasmaniana*, Walk., p. 365= ,, *tasmaniana.*

,, *notatana*, Walk., p. 365, probably belongs to the *Gelechidæ (Tineina).*

,, *cepsana*, Walk., p. 366=*Dichelia fuscicepa.*

,, *humerana*, Walk., p. 366= ,, (?) *humerana.*

,, (?) *amœnana*, Walk., p. 366=*Tortrix amœnana.*

,, *vacuana*, Walk., p. 367=*Capua vacuana.*

,, *decisana*, Walk., p. 367, belongs to the *Œcophoridæ (Tineina).*

,, *mundulana*, Walk., p. 668=*Dichelia fuscicepa.*

,, (?) *subfurcatana*, Walk., p. 368=*Tortrix subfurcatana.*

,, (?) *sparsana*, Walk., p. 369, belongs to the *Bombycina.*

,, *plagiatana*, Walk., p. 370=*Pyrgotis plagiatana.*

Conchylis leucaniana, Walk., p. 370=*Tortrix leucaniana.*

,, *recusana*, Walk., p. 371=*Pyrgotis plagiatana.*

,, *marginana*, Walk., p. 371= ,, *gavisana.*

Penthina trifasciana, Walk., p. 377, belongs to the *Tineidæ(Tineina)*

,, *indecretana*, Walk., p. 377=*Acropolitis signigerana.*

Pædisca immersana, Walk., p. 380=*Cacœcia postvittana.*

,, *lignigerana*, Walk., p. 380=*Acropolitis lignigerana.*

,, *confusana*, Walk., p. 381=*Arotrophora confusana.*

,, *luciplagana*, Walk., p. 381=*Dichelia luciplagana.*

,, *morosana*, Walk., p. 382; type worn and unrecognisable, probably belongs to *Tineidæ (Tineina).*

,, *privatana*, Walk., p. 382=*Cacœcia jactatana.*

Grapholita parvulana, Walk., p. 391=*Eudemis botrana.*

,, *extrusana*, Walk., p. 391, belongs to the *Pyralidina.*

,, *decolorana*, Walk., p. 392,=*Capua decolorana.*

,, *mutatana*, Walk., p. 393=*Capua vacuana.*

,, *perspectana*, Walk., p. 393=*Holocola perspectana.*

Carpocapsa conficitana, Walk., p. 412=*Stigmonota conficitana.*

Tospitis transitana, Walk., p. 430, belongs to *Bombycina.*

Argua scabra, Walk., p. 448, probably belongs to *Geometrina.*

Uraba lugens, Walk., p. 448, belongs to *Pyralidina.*

Teras absumptana, Walk., p. 1780; type lost, description unrecognisable.

,, *punctilineana*, Walk., p. 1780; type lost, description unrecognisable.

,, *cuneiferana*, Walk., p. 1780=*Cacœcia obliquana.*

,, *abjectana*, Walk., p. 1781; type lost, description unrecognisable.

,, *pauculana*, Walk., p. 1781=*Tortrix leucaniana.*

,, *contractana*, Walk., p. 1782; type lost, description unrecognisable.

,, *constrictana*, Walk., p. 1785; type lost, description unrecognisable.

Gobæa copiosana, Walk., p. 1805 ; type lost, description unrecognisable.

The following descriptions, erroneously placed by Walker under various groups, refer truly to species of the *Tortricina*.

Scopula arcuatalis, Walk.,=*Arotrophora arcuatalis*.
Tinea admotella, Walk., p. 485=*Capua semiferana*.
Gelechia intactella, Walk., p. 652=*Tortrix leucaniana*.
„ *adreptella*, Walk., p. 654=*Paramorpha adreptella*.
Eromene transcissella, Walk., p. 1762=*Arotrophora arcuatalis*.
„ *apertella* Walk., p. 1762=*Heliocosma incongruana*.

ADDENDUM.

Holocola triangulana.

Whilst this paper was passing through the press, I have bred the above species from the larva. Larva moderate, cylindrical, slightly thickest in middle ; whitish-grey, faintly purplish-tinged ; head and a plate on second segment ochreous-brown : it feeds in a good deal of web and refuse amongst spun shoots of *Acacia decurrens*, *(Leguminosæ)*. Pupa with a transverse row of small close oblique spikes on each abdominal segment, stronger posteriorly; lying free where the larva fed. The larva was found in August, and the imago emerged early in November.

On the Plants of New South Wales—No. III.

By the Rev. Dr. Woolls, D.D., F.L.S., &c.

Of the remaining orders of the Calycifloræ, eighteen are represented in Queensland, fifteen in New South Wales, and twelve in Victoria, so that including the great order Leguminosæ, we have

	Orders.	Genera.	Species.
Queensland	19	168	506
New South Wales	16	124	524
Victoria	14	76	349

The orders which do not extend to Victoria are the Melastomaceæ, Passifloræ, Rhizophorea, Combretaceæ, Samydaceæ, and Cornaceæ, whilst the third, fourth, and fifth of these are not represented in New South Wales. Of the Myrtaceæ, 19 genera, including 129 species, are indigenous in New South Wales, and constitute by far the greater portion of the forest trees. The genus Eucalyptus alone numbers 50 species, and these comprehend all those trees popularly known as Gum Trees, Box, Blackbutt, Woolly Butt, Stringy Bark, Bloodwood, Mahogany, Peppermints, and Iron-Bark. *Angophora* or Apple has 4 species, *Syncarpia* or Turpentine 2, *Myrtus* 5, and *Eugenia* 4; whilst the species of *Leptospermum*, *Melaleuca*, and *Callistemon*, which are known by the names of Tea-tree, Bottle-brush, &c., amount to 33. Whether considered in the extensiveness of its range, the commercial and medicinal value of its timbers, barks and resins, the beauty of its flowers or the utility of its fruits, the order of Myrtaceæ is certainly the most important in Australia. The species divide themselves into those which are fleshy-fruited, and those which are capsular. Of the former, the most valuable occur in the Tropical parts of the continent, very few occurring in New South Wales, and only one (*Eugenia Smithii*, Poirs.), extending to Victoria. In Queensland the species of *Eugenia* (which genus, according to Mr. Bentham, includes all the Myrtles that have fleshy fruits), are 14, whilst 4 only are common to New South Wales. The genera of this section are for the most part Tropical, and are found both in Asia and America; but those which are capsular, (that is having dry dehiscent fruits,) are nearly all peculiar to Australia. A few species are found in New Caledonia and the Indian Archipelago, whilst *Metrosideros* and *Leptospermum* are represented in New Zealand, the former by *M. diffusa* (Smith) and *M. villosa* (Smith), and the latter by *L. Scoparium* (Smith), "the leaves of which were used by Capt. Cook's Ships' Crews as tea, whence they named it the tea-plant (Don)." It is remarkable that this circumstance should have caused not only *L. Scoparium* (which is common to New Zealand and Australia), but all its congeners to be denominated Tea-trees. In Victoria the principal genera of the Myrtaceæ are *Bæckia*, *Melaleuca* and *Eucalyptus*, comprehending respectively 7, 12, and 30 species. The genus *Eucalyptus*, of which in Willdenow's *Species Plantarum* (1799) only 12 species are enumerated, is now known to have some 150 distinct forms, and of these, one third occur in New South Wales. It is a curious fact in the distribution of plants that very few species occur out of Australia. Mr. Bentham remarks: "With the exception of two species extending to Timor, and two or three or perhaps one single somewhat doubtful species from the Indian Archipelago, the Eucalypti are all Australian." Since the publication of the 3rd Vol. of the *Flora Australiensis*, however, Baron F. von Mueller, in his *Eucalyptographia* (Decade 4.) under *E. alba* (Reinwardt) states that: "The number of Extra-Australian species of *Eucalyptus* is extremely limited, so far as hitherto known, although additional congeners may perhaps yet be obtained from New Guinea, and even there possibly from Alpine regions." He then mentions as Extra-Australian not only *E. alba*, but also *E. moluccana*, (Roxb.), *E. Decaisneana*, (Blume) and *E. Papuana*, recently described by himself in his notes on Papuan Plants. The Baron regards the absence of *Eucalyptus* from the vegetation of New Zealand as very remarkable, and more especially as "an Eucalyptus-like tree has recently been recorded from New Ireland by the Revd. W. Brown as forming forests in that island."

The following is a list of the Eucalypts indigenous in New South Wales, arranged principally according to Baron Mueller's cortical system.

Leiophloiæ.

1. *E. stellulata*, (Sieb.)
2. ,, *coriacea*, (A. Cunn.)
3. *E. radiata*, (Sieb.)
4. ,, *saligna*, (Sm.)

5. *E. gracilis*, (F.v.M.)
6. ,, *hæmastoma*, (Sm.)
7. ,, *uncinata*, (Turcz.)
8. ,, *dumosa*, (A. Cunn.)
9. ,, *incrassata*, (Labill.)
10. ,, *viminalis*, (Labill.)
11. ,, *rostrata*, (Schecht.)
12. *E. tereticornis*, (Sm.)
13. ,, *punctata*, (DC.)
14. ,, *Gunnii*, (I. Hooker.)
15. ,, *maculata*, (Hook.)
16. ,, *obtusiflora*, (DC.)
17, ,, *stricta*, (Sieb.)

HEMIPHLOIÆ.

18. *E. Sieberiana*, (F.v.M.)
19. ,, *pilularis*, (Sm.)
20. ,, *largiflorens*, (F.v.M.)
21. ,, *hemiphloia*, (F.v.M.)
22. ,, *brachypoda*, (Turcz.)
23. *E. longifolia*, (Lk. & Otto.)
24. ,, *Stuartiana*, (F.v.M.)
25. ,, *oleosa*, (F.v.M.)
26. ,, *melliodora*, (A. Cunn.)

RHYTIPHLOIÆ.

27. *E. microcorys*, (F.v.M.)
28. ,, *acmenoides*, (Schan.)
29. ,, *botryoides*, (Sm.)
30. ,, *robusta*, (Sm.)
31. ,, *resinifera*, (Sm.)
32. ,, *corymbosa*, (Sm.)
33. *E. terminalis*, (F.v.M.)
34. ,, *eximia*, (Schan.)
35. ,, *polyanthema*, (Schan.)
36. ,, *populifolia*, (Hook.)
37. ,, *pulverulenta*, (Sims.)

PACHYPHLOIÆ.

38. *E. amygdalina*, (Labill.)
39. ,, *capitella*, (Sm.)
40. ,, *eugenioides*, (Sieb.)
41. ,, *macrorrhyncha*, (F.v.M.)
42. *E. piperita*, (Sm.)
43. ,, *dealbata*, (A. Cunn.)
44. ,, *dives*, (Schan.)

SCHIZOPHLOIÆ.

45. *E. siderophloia*, (Benth.)
46. ,, *crebra*, (F.v.M.)
47. ,, *paniculata*, (Sm.)
48. *E. sideroxylon*, (A. Cunn.)
49. ,, *melanophloia*, (F.v.M.)

Of the remaining Calycifloræ, the order of Passifloræ is represented by two genera and five species, none of which extend to Victoria; whilst of the Cucurbitaceæ, which are well represented in Queensland and North Australia, only one species *Sicyos angulata*, (Linn.) is common to the three colonies of Eastern Australia. *Momordica Balsamina*, (Linn.), which is regarded by Mr. Bentham as indigenous, is widely dispersed over Asia and Africa, and also extends to the New World. Some of the Ficoidea also have a wide range, for *Mesembryanthemum æquilaterale*, (Linn.) (the Pig-face of the Colonists) and *Tetragonia expansa*, (Murr.) (called "New Zealand Spinach") occur here and there along the coast from Tasmania to Northern Queensland. Of the Umbelliferæ there are 14 genera, 11 of which are found in New South Wales, 8 in Queensland, and all in Victoria, whilst the species are respectively 33, 17, and 34, thus showing, that although the order has species in almost all latitudes, the greatest number of them appear in the more temperate regions. Two species only of the Araliaceæ—(*Astrotriche ledifolia*, (DC.) and *Panax sambucifolius*, (Sieb.)—) occur in Victoria; and this is remarkable, as the difference between the Umbelliferæ and Araliaceæ (the latter of which are comparatively numerous in Queensland) is one rather of habit than of any decided character. The last order of the Calycifloræ, the Cornaceæ, is represented by a solitary species common to Queensland and New South Wales.

In addition to the 11 species of leguminous plants unknown here in the early days of the colony, but now widely dispersed throughout it, the following may be enumerated:

Rosa rubiginosa, (Linn.)
Ænothera biennis, (Linn.)
Ænothera rosea, (Willd.)
Epilobium roseum, (Sm.)
Passiflora cærulea, (Willd.)
Ammi majus, (Linn.)

Sium latifolium, (Linn.)
Sium angustifolium, (Linn.)
Fœniculum vulgare=*Anethum fœniculum*, (Willd.)
Bupleurum rotundifolium, (Willd.)

Of these plants *Rosa rubiginosa*, is becoming very troublesome in the Sonthern parts of the colony, whilst of the introduced Umbellifers, the species of *Sium* are supposed to be poisonous. From the estimate now formed, the species of the Subclass Polypetalæ are as follows:

Indigenous	872
Introduced	50

NOTES AND EXHIBITS.

Baron Maclay read a note on the "Progress of the Sydney Biological Station at Watson's Bay," also "Notice of an intended Trip to the South Coast of New Guinea and the North-east of Queensland."

Baron Maclay also exhibited sketches illustrating the deformation of the heads of new-born children at the island of Mabiac, and drawings of types of natives on the South Coast of New Guinea, (pure and mixed Papuan.)

Mr. Haswell exhibited specimens of *Amphioxus* found at Port Curtis, Port Denison and Thursday Island with sketch and drawing.

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WEDNESDAY, AUGUST 31st, 1881.

The President, J. C. Cox, M.D., F.L.S., &c., in the Chair.

MEMBER ELECTED.

Mr. J. G. Griffin, C.E., of Tamworth.

DONATIONS.

Museum D'Histoire Naturelle Paris, annual reports for 1879-80

From Friedlander and Sons, Bibliotheca Historico-Naturalis et Mathematica.

Journal of the Royal Microscopical Society of London, 1881.

Royal Society of Edinburgh, Proceedings, Vol. X.

Zoological Station, Naples, Trans. Vol. II., part 4.

Royal Academy of Sciences, Amsterdam, Trans. Nat. Hist. Branch, 2 series, Vol. XV., and Annual Report for 1879.

Royal Society of New South Wales, List of Exchanges and Presentations, 1881.

PAPERS READ.

ON THE PLANTS OF NEW SOUTH WALES—NO. IV.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

The Sub-class II., Monopetalæ, is very extensive, and the species described in the *Flora Australiensis* range from Vol. III., p. 386 to Vol. V., p. 142. So far as the limits of these species are yet recorded, the following is the approximate result:

	Orders.	Genera.	Species.
Victoria	25	142	326
New South Wales	30	201	654
Queensland	28	239	596

When the floras of particular districts in Eastern Australia, are more carefully observed and the limits of indigenous plants are better understood, these numbers (especially those for Queensland) will need considerable revision. For whilst there is reason to believe that some plants now regarded as Victorian will be found common to new South Wales and Victoria, so, on the other hand, some known only from the Southern parts of Queensland, will be found to extend to New South Wales, and *vice versa*. The information, however, which has been afforded by the *Flora Australiensis* and the *Fragmenta Phytographiæ Australiæ*, is highly useful in enabling us to compare the floras of the respective colonies, and to form a tolerably correct idea of the peculiarities of each. It appears that the Monopetalous orders not represented in Queensland are the *Ericaceæ*, common to Victoria and New South Wales; the *Orobanchaceæ* extending from Victoria and South Australia to the Western Coast; and the *Selagineæ* of West Australia. The orders not occurring in Victoria are the *Plumbagineæ*, *Sapotaceæ*, *Ebenaceæ*, *Styraceæ*, *Hygrophyllaceæ*, *Acanthaceæ*, and *Pedalineæ*. In this part of the world, the Epacrids usually take the place of Heaths, but *Wittsteinia vacciniacea*, (F.v.M.) and *Gaultheria hispida* (R. Br.) are found in the Southern parts of the Eastern Colonies, the former in Victoria, and the latter in New South Wales and Victoria. The limited range and number of Heathworts in Australia and Tasmania may be regarded as indicating the relics of a Flora which once connected the vegetation of Australia with that of countries not separated from it by the ocean. For the genus *Gaultheria* spreads not only over the mountainous regions of America and Tropical Asia, but it extends through the Antarctic Islands and New Zealand to the summits of the mountains at the head of the Bellinger and the Southern mountains of New South Wales. In Queensland, the *Compositæ*, *Apocyneæ*, *Asclepiadeæ*, *Rubiaceæ*, *Convolvulaceæ*, and *Solaneæ*, furnish a large number of species respectively; whilst the *Acanthaceæ*, which in new South Wales are but poorly represented (*Ruellia australis*, (R. Br.) and *Eranthemum variabile*, (R. Br.)

being the only species widely distributed), are known to have at least 18 species in Queensland, of which *Graptophyllum Earlii*, (F.v.M.) is a beautiful shrub rising sometimes to the height of 15 feet. The most extensive order of the Monopetalæ in New South Wales is that of the Composites, comprehending 52 genera and upwards of 200 species, of which *Olearia argophylla* (F.v.M.) is perhaps the most remarkable. Mr. Bentham reckons the whole number of Australian Composites at 500, and he has arranged them in 88 genera. There is, however, great difficulty in determining whether some species, common to other parts of the world, are indigenous or not. After having carefully considered the subject, I am of opinion that the following have been introduced:

1. *Centaurea Melitensis*, (Linn.)
2. *Centaurea calcitrapa*, (Linn.)
3. *Carthamnus tinctorius*, (Linn.)
4. *Onopordon acanthium*, (Linn.)
5. *Carduus marianus*, (Linn.)
6. *Eupatorium cassabinum*, (Linn.)
7. *Erigeron canadensis*, (Linn.)
8. *Erigeron linifolius*, (Willd.)
9. *Xanthium spinosum*, (Linn.)
10. *Tolpis barbata*, (Willd.)
11. *Siegesbeckia orientalis*, (Linn.)
12. *Galinsogea parviflora*, (Cav.)
13. *Bidens pilosa*, (Linn)
14. *Tagetes glandulifera*, (Schranck.)
15. *Anthemis cotula*, (Linn.)
16. *Chrysanthemum segetum*, (Linn.)
17. *Chrysanthemum Parthenium*, (Pers.)
18. *Soliva anthemifolia*, (R. Br.)
19. *Gnaphalium luteo-album*, (Linn.)
20. *Gnaphalium purpureum*, (Thunb.)
21. *Senecio scandens*, (DC.)

22. *Cryptostemma calendulacea*, (R. Br.)
23. *Hypochæris glabra*, (Linn.)
24. *Wedelia hespida*, (Kth.)
25. *Picris hieracioides*, (Linn.)
26. *Crepis japonica*, (Benth.)
27. *Sonchus oleraceus*, (Linn.)
28. *Cichorium Intybus*, (Linn.)
29. *Leontodon hirtus*, (Linn.)
30. *Tragopogon porrifolius*, (Linn.)
31. *Taraxacum dens-leonis*, (Desp.)

The whole number of introduced plants belonging to the Monopetalæ may be reckoned 58, and of these it appears that more than half are Composites, some of which, owing to the facility with which their seeds are wafted in all directions, have increased to a great extent. The most troublesome to the agriculturists on the banks of the Hawkesbury are *Tagetes* and *Wedelia*, for they spread over the cultivated flats and injure the crops of cereals. *Carduus* and *Onopordon*, which, in other parts of the colony, have taken possession of alluvial soil and impeded the progress of cultivation, have made but little advancement in the same locality. Amongst the Monopetalæ of Australia, there are some very interesting plants, such as the species of *Stylidium* with their elastic column, the *Goodenoviea* with their curious indusium, and the order of the Epacrids, remarkable for their limited distribution out of Australia and their separation from Heathworts by the opening of the anthers. Of the Epacrids, 65 species are indigenous in New South Wales, one of which attains the dimensions of a tree *(Trochocarpa laurina)*; and two *(Epacris purpurascens* and *E. microphylla)* are amongst the few Australian shrubs which have been found with double flowers in a wild state. Some species also afford small edible fruits; but of the Monopetalæ, *Achras australis*, *Cargillia australis*, and some kinds of *Solanum* (of which New South Wales has 22 species) are more appreciated in this respect, especially *S. esuriale* and *S. vescum*.

The gigantic climbers *Lyonsia straminea* and *reticulata* of the Apocyneæ are remarkable for finding their way to the summits of lofty trees, whilst several species of the Gentian Family are likely to be utilised as medicinal plants. Nor should I omit to mention in the same category *Duboisia myoporoides* and *D. Hopwoodii*, which have lately elicited some valuable correspondence in these colonies, particularly from Dr. Bancroft of Brisbane. Perhaps I may be permitted to mention, that my excellent friend the late Mrs. Calvert called my attention to the properties of *D. myoporoides* some years since, and that in my "*Contribution to the Flora of Australia*," p. 178, I alluded to the fact, that from this plant the blacks were in the habit of preparing some intoxicating beverage. Of the Myoporineæ, the genus *Eremophila* is limited to Australia, and several species are worthy of cultivation for the beauty of their flowers. *E. Mitchellii* is the Sandal-wood of the interior, and *Myoporum Cunninghami* (which Mr. Bentham regards as a narrow-leaved variety of *M. acuminatum)* extends from the interior of Queensland to the borders of Victoria. The Labiates of New South Wales are limited to 11 genera, including 41 species, of which 22 belong to the genus *Prostanthera*, which so far deviates from the ordinary type of Labiates as to afford in *P. lasianthus* the largest known plant of the order, with showy flowers and strongly scented glands. Mr. Bentham states that the genus is limited to Australia, and that only two species are natives of Western Australia. Of the herbaceous species of the order, the Mints (*Mentha australis*, and *M. satureoides)* afford a highly scented volatile oil, whilst of the introduced species, *Marrubium vulgare* and *Stachys arvensis* have established themselves here and there throughout the colony in waste places and cultivated ground. The Verbenaceæ, like the preceding order, comprehend both trees and herbs, for whilst *Clerodendron*, *Gmelina*, *Vitex* and *Avicennia* may be reckoned amongst the former, many of the species are of the latter class. The common *Verbena officinalis*, is looked upon as being indigenous, but *V. Bonariensis*, which is regarded as a troublesome weed, not only in the county of Cumberland, but beyond the Dividing Range, seems to be a plant of foreign origin.

In concluding this brief notice of the Monopetalæ, it may be seen that the species in New South Wales are far more numerous than those of the Thalamifloræ or Discifloræ, whilst they exceed the recorded species of Calycifloræ by more than 100. The whole amount of these grand divisions will probably be more than 1,200, whilst that of the introduced plants is upwards of 100.

ON THE OCCURRENCE OF *Pseudophycis breviusculus*, RICHARDSON, IN PORT JACKSON.

BY E. P. RAMSAY, F.L.S., C.M.Z.S., &c.

During a recent dredging excursion in Port Jackson I obtained from the interior of a large shell of *Dolium variegatum*, a fine specimen of a Pseudophycis, which appears to belong to the *Lota breviusculus* of Richardson; when alive this fish was of an olive brown tint, slightly greenish about the head, and of a pinkish hue on the belly; the whole of the fish was covered by a thick mucous. In length it is about 6 inches, greatest height 2 inches. There are nine (9) rays in the first dorsal, and from 47-48 in the second, the pectoral fin is as long as the distance from its base to the centre of the orbit, the maxillary reaches to the posterior margin of the orbit, the longest ventral ray equals the distance between the anterior margin and the extremity of the operculum; the height of the body between the vent and the last (ninth) ray of the first dorsal, equals the distance between the lower margin of the base of the pectoral, and the end of the snout. In all other respects this specimen agrees with the description of *Lota breviuscula* of Richardson, under which species I prefer to retain it for the present.

DESCRIPTION OF A NEW SPECIES OF HONEY-EATER FROM S. E. COAST OF NEW GUINEA.

BY E. P. RAMSAY, F.L.S., C.M.Z.S., &c.

PLECTORHYNCHA (?) FULVIVENTRIS, *sp. nov.*

Total length about 8 inches, wing 3·8, tail 3·2, bill from forehead 0·95, from nostril 0·5, from gape 1 inch. The fifth and sixth quill nearly equal and longest, tail of 12 feathers. The whole of the upper and under surface of a dull brown washed with olive, browner on the rump and upper tail coverts; very faintly tinged with olive-yellow on the outer webs of the wing feathers; on the head and back of the neck the olive-yellow is more defined; the throat slightly fulvous, the breast, under wing-coverts, abdomen and under tail-coverts, more decidedly fulvous, inner webs of the wing feathers fulvous, the other portions of the wings and tail dull light brown; legs flesh-colour; bill light straw-colour, dark brown along the culmen. The third primary is slightly shorter than the fourth; the fifth and sixth quill equal and longest, the fourth very slightly shorter than the fifth; the tail not quite so even as in *Plectorhyncha lanceolata*, (Gould).

Hab. Mountain ranges of South East Coast of New Guinea.

The tongue having been removed from the only specimen, it is difficult to determine the Family of this species, for the present I prefer to keep it under the genus *Plectorhyncha* of Gould, in the Meliphagidæ.

NOTES ON THE ZOOLOGY OF THE SOLOMON ISLANDS, WITH DESCRIPTIONS OF SOME NEW BIRDS.—Part III.

BY E. P. RAMSAY, F.L.S., CURATOR AUSTRALIAN MUSEUM.

ASTUR VERSICOLOR, *sp. nov.*

Adult female.—Total length 17 inches, wing 9·75; tail 8 in.; tarsus 2·8; mid. toe *(s.u.)* 1·75, hind toe *(s.u.)* 0·95; bill from forehead 1·2, from cere 0·7, from gape 1·15; culmen from base of cere 1·3.

The whole of the upper and under surface of the body, wings and tail above, and the under wing and tail-coverts of a bluish-slate black, slightly darker on the quills and margins of the scapulars and coverts; the under surface of the quills and tail feathers bluish-ashy, except at the tips, towards the base they are almost white on the inner webs of the first to fourth primary. Of the tail, the outer two and the centre two are without bars, the remaining feathers, as well as some of the primaries show remains of blackish bars; the basal portions of the feathers on the crown, nape, and hind neck are white; on the lower part of the hind neck and on the rest of the body the bases are dusky; "irides bright yellow, bill black, cere and legs reddish-yellow." *(Morton.)*

Immature female.—General colour above and below light tawny or pale rufous; the tips of the feathers on the head and ear-coverts blackish slate or bluish slate-black; the base of the feathers on the crown and hind neck white, lower part of the hind neck rufous, each feather barred with dark brown and tipped with blackish; on the scapulars and wing-coverts the final blackish bar is subterminal, each feather having a narrow rufous edging; secondaries margined and tipped with rufous, and with at least twelve bars, their outer webs blackish; primaries similar but no rufous margins on the outer web, upper tail-coverts barred with blackish, and margined at the tips with rufous; tail blackish-brown above, ashy-brown below, all the feathers crossed with narrow black bars about twenty in number from the very base to the tip, the last bar subterminal and wider than the others, the inner webs of the feathers below washed with rufous. All the under surface rufous, throat and under tail-coverts without bars, feathers of the chest, breast, and abdomen with black spots or bars, hastate, cordate, or lanceolate in form, some feathers have only a lanceolate spot at the mesial portion near the tip, others and those on the flanks have three or four irregular bracket shaped narrow bands; on the thighs the markings are V shaped and of a rufous-brown tint; shoulders below and the under wing-coverts deep rufous, with a few V-shaped, or hastate markings; inner webs of all the quills except at the tips of the five first of the primaries, pale rufous. Bill blackish, legs greenish grey.

Progress towards maturity, female.—The blackish markings on all the feathers become more and more wide, and finally confluent leaving only a dark rufous margin to the ends of the feathers, the throat, abdomen, and under tail-coverts also, become barred and the rufous tint much deeper; ashy-white appears on the interspaces between the black bars on the under surface of the quills. The ear-coverts, cheeks, nape, back of the neck and interscapular region becomes black first, the rufous edgings are the last to disappear. Bill blackish, legs brownish-yellow. Three specimens only of this interesting species, were secured, unfortunately all females and almost exactly the same in dimensions, they were obtained at the Island of Ugi, Solomon Group.

NASITERNA FINSCHII, *Ramsay*.

Proc. Linn. Soc., N.S. Wales, Vol. VI., pt. 2, p. 180, 1881.

Among the *Nasiternæ* collected by Mr. Alex. Morton on the Island of "Ugi," one of the Solomon Group, I find an example of what I believe to be the male of this species, and from which I take the following description.

Adult male.—Similar to the type specimen, which is a female, but having on the centre of the abdomen a spot of deep rich red, a small spot of light yellow on the distal end of the tibia, behind; the wing-coverts conspicuously centred with black which forms in some a triangular spot; the feathers round the base of the lower mandible are tinged a little more conspicuously with blue, and some of the greater series of the under tail-coverts, which are deep yellow, are tipped at the apex with verditer-blue; bill black.

Total length (spirit specimen) in the flesh 4·3; wing 2·6; tail 1·6; tarsus 0·35; bill from the angle of the mouth to tip 0·32, from the same point to the notch of upper mandible 0·22, from nostril to the tip 0·4, the culmen from anterior margin of cere 0·38.

Young.—In the same collection are several specimens which appear to me, to be the young, they differ in being of a less bright green below, there is no blue tinge on the cheeks, but the two or three rows of cheek feathers next to the lower mandible are tipped with rose or have a spot of that colour on either side of the shaft near the tips, this rosy hue round the lower mandible is observable in four of the specimens collected, three of which were obtained on the Island of St. Christoval, and the other on the Island of Ugi. In size they are all exactly the same, three males and one female; and in measurements differ very little from the types of *N. Finschii.*

Length (spirit specimen) in the flesh, 4 inches; wing 2 4; tail 1·35; tarsus 0·3; bill from the gape to tip 0·3; from gape to notch 0·26; from nostril to the tip 0·3; the culmen from the anterior margin of cere 0·31.

It is quite possible that these which I presume to be the young of *N. Finschii* may be hereafter proved to belong to distinct species, however, for the present, I prefer not to separate them.

IANTHENAS PHILIPPANÆ, *sp. nov.*

Adult male.—The head, nape, throat and upper part of the neck french grey with an opaline rosy lustre; the wings and tail above and below blackish-slate blue, almost black, all the rest of the plumage light bluish-slate colour, burnished with metallic reflections of rich green and pale rose. The upper and under wing and tail-coverts like the wings and tail, but margined with the same metallic colours as the body; in reflected light the tint is rich rose, by transmitted light rich bright green. "Bill coral red, feet bright deep yellow, iris rick yellow, skin round the eye above reddish-yellow, below light bluish-grey."—*(A.M.)*

Total length 15·2. wing 9·5, tail 6 inches, tarsus 1·2. Bill from forehead 1·3. from nostril 0·8, from gape 1·4; mid. toe *(s.u.)* 1·4, hind toe 0·8.

Although closely allied to *Ianthenas pallidiceps** it differs from the type in the ground or non-metallic colours of the feathers of the body being light slate blue, and not *blackish-brown*, and the rose colour of a much brighter tint, not inclining to purple.

I have dedicated this fine species to the amiable wife of the gallant Commander James Bruce, R.N. of H.M.S. "Cormorant."

Hab. Island of Ugi.

PTILOPUS RICHARDSI, *sp. nov.*

The whole of the head, neck, sides of the body, chest, breast, and under surface of the shoulders delicate french grey, slightly tinged with a wash of very pale olive-green, the crown of the head, sides of the face, in front of the eye, pale lavender extending to the base of the lower mandible; round the occiput is a shade of yellow in certain lights; the throat tinged with pale yellow; a large patch on the abdomen, the vent and under tail coverts deep orange, the under tail-coverts centred with rosy carmine; body above from between the shoulders olive-green; outer webs of the quills golden-green, secondaries narrowly margined with pale gold, the inner webs of the scapulars are of a beautiful delicate rose tinted with carmine, and margined with orange towards the tip, yellow towards the basal portion, a rose carmine lanceolate mesial spot near the tips of the adjacent wing-coverts, increasing in size and intensity of colour on the central portions of the larger feathers, but confined to an elongated stripe on the inner webs of the tertiaries; wings below lead-grey, tail ashy or lead-grey below, the outer webs above green, the inner blackish, the tips of all the feathers below ashy but distinctly washed with olive-yellow above, and forming a terminal band; bill lead-colour, tip straw colour; feet red, the tarsus is feathered for about two-thirds of its length; the feathers on the chest are slightly bifurcated as in those of *P. reginæ*, &c.; tip of the first primary narrow, elongated.

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*In my description of this bird, in the P.L.S., of N.S.W., Vol. II., p. 249, in the first line of the page the word "reflected" should be "*transmitted*."

Total length 8·3; wing 5·2, tail 2·9, tarsus 0·8, bill from the gape 0·8 inches.

Hab, Island of Ugi, Solomon Group.

Morton found this species tolerably abundant on Ugi, but on no other Island visited; he was also fortunate enough to find the nest and eggs, like that of all the genus the nest is a frail scanty structure of a few twigs placed over a fork of a branch about twenty feet from the ground; the egg is oval, rather pointed at the thin end; pure white, length 1·22, in breadth 0·83. A second nest and egg taken by Dr. T. H. Lewis, R.N., H.M.S. "Cormorant," are similar, but the thicker end of the egg is more rounded, both eggs were nearly hatched, and a bird shot from one of the nests proved to be a male; in some of the females eggs were found ready for laying. From a nestling obtained in June, I take the following description:

All the upper surface green, slightly tinged with bronze, on the wings and tail, the wing-coverts, secondaries and scapulars margined with yellow, the three or four smaller innermost secondaries (*or tertiaries*) having the tips and the whole of the inner web yellow, except at the base, the primaries narrowly margined with yellow, tail above bronzy-green, the tips of all the feathers ashy, washed with green, and distinctly margined with yellow; the under surface is ashy-grey, the tips lighter and margined with yellow; the under tail coverts and abdomen yellow, the throat pale yellowish; all the rest of the under surface ashy, the tips of all the feathers margined with light yellow; forehead ashy; the first primary attenuated at the tip. Length 6·5, wing 4·8, tail 2·8, tarsus 0·8, bill olive, feet reddish.

PTILOPUS LEWISI, *sp. nov.*

Ptilopus viridis, var. Ramsay, in P.L.S. of N.S.W., Vol. IV, 1879, p.p. 73, 74.

Ptilopus eugeniæ, *(female)* Ramsay, Journal of Linn. Soc. London, Zool. 1881.

From an extensive series of *Ptilopus eugeniæ*, (Gould.) collected by Mr. A. Morton at Ugi, Solomon Islands, and which contains adults of both sexes, and also a very young female in the nestling plumage, it is evident that the bird I described as *P. viridis*, var. (*l.c.*) is a distinct species, Morton also abtained a young bird of this new species in plumage the same as the adult, which confirms me in this view. A description of this species will be found in the Proceedings of the Linnean Society of N.S.W., Vol. IV., 1879, pp. 73, 74, as quoted above.

Hab. Islands of Florida and Malayta, Solomon Group.

I have named this species in honour of Dr. T. H. Lewis, R.N. of H.M.S. "Cormorant.

PTILOPUS EUGENIÆ, *Gould.*

Ptilopus eugeniæ, Gould—Ramsay, in Journ. Linn. Soc., London, Zool., 1881; ♂.

The young on leaving the nest have the chin and forehead only white, and the rest of the head ashy, washed with green, the greater wing-coverts and the secondaries are margined on their outer webs with pale yellow, in other respects the plumage is like that of the adult; the adult males and females are alike in plumage, the male having the white extended a little further down the neck.

PTILOPUS JOHANNIS, *Sclater.*

Ptilopus solomonensis, Gray, ♀. *Ptilopus cerasseipectus*, Tristram, ♂

There can be no doubt that the female bird described by Gray is of the same species as *Ptilopus johannis* of Sclater, but as Gray's description may stand for other females of the same genus, I do not think that his name can be retained.

Hab. Ugi, and St. Christoval, Solomon Islands.

CHALCOPHAPS MORTONI, *sp. nov.*

Total length 8·5 inches, wing 6 inches, tail 4 inches, tarsus 1·1, bill from forehead 0·9, from nostril 0·42 from gape 0·9, mid. toe (*s.u.*) 0·9, hind toe 0·6.

The whole of the front of the head slate-blue; crown, occiput, nape, hind neck, shoulders, interscapular region and scapulars dark chocolate; the rump of a darker chocolate-brown, crossed by an anterior and posterior band of light cinnamon; upper tail-coverts and tail above rich dark cinnamon-red, the outer feathers of the tail centred with light slate-blue or bluish ash, a subterminal band of blackish, the next two feathers of a rich cinnamon red approaching to rufous and having a similar subterminal black band or spot, on the under surface the black band is extended down the margin of the inner web of the under tail-coverts, the outer ones are like the upper tail coverts, the longer central ones show a mixture of blackish brown and chocolate; the whole of the under surface of the body is of a rich cinnamon. The under wing-coverts and inner webs of the primaries and some of the adjacent secondaries rich deep cinnamon rufous, quills above dark brown tinged with cinnamon, the outer webs of the tertiaries (or inner secondaries) and the median and greater coverts rich bronzy-green. In certain lights there is a rosy-purple tinge on the upper hind neck and scapulars.

Hab. Ugi. *(Morton.)*

I believe the bird I described under the name of *Chalcophaps chrysochlora* var. *sandwichensis* (P.L.S. of N.S.W., Vol. III., p. 339) to be the *young* of this species, I therefore withdraw that name in favour of the name I have here bestowed on the *adult*.

MYIAGRA CERVINICAUDA, *Tristram.*

From the series brought by Morton, I find, both among the skins and those in spirits, several specimens which prove without doubt, that the young males resemble the females in having the same fawn coloured plumage, and dull lead-coloured head, &c. The male is a very different bird, resembling *Myiagra plumbea* of N.S.W. and may thus be described.

Adult male.—The throat, chest, and all the upper surface plumbeous, almost black on the wings, tail, head, and throat; very slightly glossed on the wings and tail, but with a conspicuous metallic gloss of greenish in certain lights, on the head, throat, and chest; lores black; inner margins of the quills, under tail- and wing-coverts, lower part of breast, and the abdomen pure white; iris dark brown; bill and legs black; length 4·9; wing 2·6; tail 2·4; tarsus 0·65; bill from forehead 0·65, from nostril 0·35, from the gape 0·7, breadth at gape 0·4, at nostril 0·28.

Hab. Ugi. *(Morton.)*

STURNOIDES MINOR, *sp. nov.*

All the body plumage and the upper and under wing and tail coverts black, with slight metallic greenish reflections, the primaries and secondaries and the tail feathers earthy-brown, the primary-coverts washed with black and a blackish shade over the basal portion of the outer webs of the primaries, the inner webs of the quills above and below have a faint reddish-brown tinge; the outer webs of the tail feathers and the centre two feathers washed with blackish-brown, the under surface lighter, bill, legs, and feet black. The feathers of the head, neck, and chest, and upper part of interscapular region pointed and slightly glossed with purple.

Total length of skin about 7·4; wing 4·3; tail 3 inches; tarsus 1 inch; hind toe *(s.u.)* 0·6; bill from forehead 1·05, from nostril 0·65, from gape 1·15, culmen 1 inch, the width of gape 0·55, at nostril 0·25; the bill strong and wide at the base, from in front of the nostril to the tip laterally compressed, with the culmen strongly curved to the tip.

Hab. St. Christoval. *(Morton.)*

Since this paper was read I have received another large collection of birds from the Solomon Islands, which contains a fine series of *Astur albigularis*, (Gray), these tend to prove that my *A. versicolor* is a stage of plumage of *A. albigularis*, but a large series must be carefully sexed before the matter can be decided; I will lay before the Society a paper on this subject without delay.

FRUCTIFICATION OF THE BUNYA.

BY THE HON. JAMES NORTON, M.L.C.

About forty years ago it began to be noticed that the *Araucaria excelsa* (Norfolk Island Pine) produced large cones abundantly, and the market gardeners at once began to plant the nuts obtained from these cones freely, but were disappointed on finding that none of them germinated. To botanists the reason was obvious, for the plant being monœcious had not yet produced the male cones or catkins, as they should perhaps be called.

In the year 1852 I noticed in "Curtis' Botanical Magazine, Tab. 4365," the figures and description of the cones of *A. columnaris*, which were stated to have been forwarded to England by Mr. Charles Moore, who was then, as now, Director of our Botanical Gardens. This induced me to examine the Norfolk Pines carefully, and, singularly enough, I immediately found them commencing to produce the male cones in profusion.

The consequence was that the nuts became fertile, and at Annandale it was found that the young plants came up as freely as the barley among which they fell, and produced a crop much more profitable to Capt. Johnstone.

At that time there were few if any well grown plants of *A. Bidwilli* (Bunya) in the Colony, and in 1857 I planted at Ecclesbourne, Double Bay, a specimen which had been raised in a pot and must then have been a few years old, and which is consequently now about 30 years of age and about 40 feet in height. This and other specimens subsequently planted have produced female cones abundantly, but after examining hundreds of the nuts I have succeeded in finding only about half a dozen fertile ones.

The planting of the first fertile nuts found was unfortunately delayed rather too long and therefore produced no result, but the three found last year were planted immediately and produced roots within a few days. Their subsequent progress was at first quite satisfactory, but through the neglect of a gardener the plants have now probably perished.

There can be little doubt that the fertility of the few good nuts found was produced by the pollen from either *A. excelsa* or *A. Cunninghami*, for it is certain that *A. Bidwilli* had not then produced male cones.

At Camden Park there may be seen a large tree which was grown from a nut produced on the spot, and supposed to have been fertilized by *A. Braziliensis*. There is certainly a difference between it and the mother plant standing close by.

The fact which I now wish particularly to bring before the Society is that the tree first planted by me has this year for the first time borne numerous male cones, which will probably enable us to produce young plants freely and so greatly diminish the risk of the extinction of a tree which is fairly considered to be one of the most beautiful in the world.

The male cones as in other *Araucarias* are produced on the leaf spires but not at the ends, as is the case with *A. axcelsa*, while the females spring from the solid wood of the branches which have no difficulty in supporting their great weight.

It is a little dangerous to work under the Bunya at the time of year at which the cones fall, for a blow on the head from one of them falling from a height of 40 or 50 feet would be a serious matter as they fall bodily and not piecemeal as in the case of *A. excelsa*.

The fruiting cones have not yet appeared and probably will not do so till the male is sufficiently advanced to produce the pollen which will probably fertilize them.

I may here mention that about seventeen years ago I planted an avenue of these trees which have greatly puzzled some of the gardeners who believe them to be a variety of the true Bunya. The explanation of the matter is that in order to prevent their enormous spread the ends of the branches have been several times lopped. This has caused the wounded parts to threw out numerous branchlets which have made the trees look very rich and compact and probably also caused them to grow taller than they otherwise would have done.

I cannot imagine anything more beautiful than these trees at the beginning of summer when they throw out a profusion of young pale green shoots contrasting very strikingly with the older dark green foliage.

NOTES AND EXHIBITS.

The Honble. James Norton exhibited some male cones of the Bunya tree mentioned in his paper.

Dr. Cox exhibited a curious albino variety of *Platycercus pallidiceps* from Queensland.

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WEDNESDAY, 28TH SEPTEMBER, 1881.

The President J. C. Cox, M.D., F.L.S., &c., in the Chair.

MEMBERS ELECTED.

E. L. Layard, C.M.G. &c., Noumea; Alex. Oliver, M.A., and Dr. Charles Mackellar, M.D., Sydney.

DONATIONS.

Geological Sketch Map of New South Wales, from the Department of Mines.

Report of the Tasmanian Salmon Commissioners for 1880.

PAPERS READ.

THE BOTANY OF THE SPRINGSURE DISTRICT.

BY P. A. O'SHANESY, F.L.S.

The town of Springsure is situate in 24° South Latitude, and about 148° 15′ East Longitude, and is botanically and geologically one of the most interesting districts in this part of Queensland. The surrounding country is entirely volcanic, and it can scarcely be surpassed for pastoral purposes, its rich, rolling downs spreading out almost as far as the eye can reach, covered with nutritious grasses, and here and there intersected by creeks of beautiful water. The Orange, Grape, and other fruits thrive here, and evidently at no very distant date its rich volcanic downs will be converted into immense wheat fields. All the efforts of the squatter to check the marsupials in this district appear unavailing, for late in the evening these downs are literally alive with kangaroos, as they emerge from their retreats to feed at night on the tender herbage. The elevation of Springsure above the sea is about 1,000 feet, and consequently its climate is very temperate; its distance from Rockhampton is about 170 miles, and between thirty and forty miles south of west. It lies at the Southern extremity of a steep, broken, rocky range of mountains, which appears to be entirely detached, but is probably a broken spur from the southern part of the Drummond Range, from which it is distant about forty-five miles due west. Several of the mounts in the neighbourhood of Springsure shoot up to a height of 200 or 300 feet above the surrounding country, and the sides, which are mostly perpendicular, consist of naked rock, but their summits are clothed with various kinds of trees and plants. Evidently the inhabitants of Springsure are determined to perpetuate the name of the "Prince" of the Apostles, as several mounts in the neighbourhood are named after St. Peter, and one in particular is called the Great St. Peter's. This is an immense, square, flat-topped rock, with perpendicular sides, and it is plainly discernible from Emerald Downs Station, a distance of fifty-five miles. As another instance of the religious enthusiasm of the Springsure people, the "Madonna" is pointed out in the rocky face of the mountain, within a mile of the town, and the reverend gentlemen who accompanied the writer imagined they could trace another Madonna in the side of another mountain, so that, with the enchanting scenery and the holy and venerable names associated therewith, one almost fancies himself in some celestial region.

But to be serious. As already remarked, this district is very interesting to the geologist, the surrounding hills abounding in opals, chalcedony, jasper and hyalite or "Glass-stone." Valuable opals have been found on a rocky ridge within half a mile of Springsure, and opaline rocks are to be met with everywhere, and it is the opinion of an eminent geologist, the Rev. Tenison-Woods, who has visited the mine, that if properly worked it would prove remunerative. But though opals are more precious than botanical specimens, which are of little or no pecuniary value, yet to search for opals was not the object of the writer's visit, and therefore he will leave that subject to some more competent person, and proceed to enumerate the plants we noticed during our excursion from Emerald to Springsure, a distance of about fifty miles. We crossed the Nogoa River half a mile from Emerald, in the bed and along the banks of which we noticed large trees of *Melaleuca trichostachya*, *Casuarina Cunninghamiana*, *Eucalyptus tereticornis* and *E. brachypoda*. The track then runs through a solitary patch of rich open volcanic downs, covered with the yellow flowered *Bulbine bulbosa* and the beautiful red-flowered *Pimelea hæmatostachya*, which formed a charming contrast. Here and there, too, we noticed the pretty white-flowered *Hibiscus ficulneus*, the dwarf *H. trionum*, *Plumbago zeylonica* and the curious little *Indigofera glandulosa* with its small scarlet flowers and winged pods. Half a mile farther on we enter a dense Brigalow scrub, which continues unbroken for the next fourteen miles. There we saw *Carissa ovata* very plentiful, the black, milky berries of which are not to be despised.

The term "Brigalow" is applied by Southern writers to *Acacia excelsa*, which they evidently mistake for *A. harpophylla*, which is the true Brigalow, but it is easy to conceive how this error has been propagated seeing that neither *A. excelsa* nor *A. harpophylla* appear to occur in the southern part of the Colony. We noticed several different kinds of trees and shrubs in this scrub, among which are the following: *Ventilago viminalis*, a tree of 30 to 40 feet, *Elæodendron australe*, 15 to 20 feet, *Myoporum deserti*, a low shrub, *M. acuminatum*, a shrub of 10 to 15 feet, *Heterodendron oleifolium*, a tree of 40 to 50 feet, *Cassia australis*, *C. eremophila*, *Terminalia oblongata*, a tree of 30 to 30 feet, *Albizzia basaltica* and a few species of *Eucalyptus*. At the far off end of this scrub we saw *Acacia pendula* or "Gidea" 20 to 30 feet high. We also noticed the variety *Amplexifolius* of *Loranthus longiflorus*, which I consider as a distinct species. It is not, as Bentham considers probable, an inconstant form of the leaves of *L. longiflorus*, nor does it occur on the same tree with that species. It is rare in this district, but I have seen it on two or three occasions. The narrow-leaved form of *Loranthus exocarpi* is common in this scrub, and is most frequently found on *Bauhinia Carronii,* but I have also noticed it on *Acacia excelsa,* hanging to a length of four or five feet. *L. quandang* is very common on *Acacia harpophylla,* to which tree it appears to be entirely peculiar, and it assumes the hoary colour of the foliage of that tree. The peduncles of this *Loranthus* are reflexed, causing the flowers to be pointed upwards although the branches are pendulous. Evidently there are two species confounded in the *Flora Australiensis* under *Loranthus pendulus,* which is also common in this scrub. The typical *L. pendulus* has long lanceolate-falcate leaves, with three to five prominent nerves, and the flowers are on slender peduncles nearly two inches long, of three to six rays, each ray with two or three pedicillate flowers of a bright scarlet colour, and the plant is, as far as I have seen, entirely peculiar to the Eucalypts. This is the most constant species of the *Loranthi;* for no matter on what Eucalypt it is found it always presents the same appearance. The plant described as a form of the above species with *obovate-oblong-cuneate* leaves is evidently a distinct species. The leaves are very thick, one to two inches in length, with three obscure nerves; the common peduncle is very short, with one to three rays, each bearing one to three flowers, with the central one or all three sessile; anthers adnate, petals free, *yellow* and reflexed, and of a dark colour for some distance above the base. This species appears to be almost entirely peculiar to *Geijera parviflora,* and it seldom exceeds more than one or two feet in length, with thick, rigid branches. *Loranthus longiflorus* is peculiar in this district to *Eucalyptus melanophloia,* but I have noticed it at Rockhampton on *E. tereticornis.* From the scrub to within a short distance of Springsure are open downs, thinly timbered, mostly with *Eucalyptus terminalis,* and in the moist gullies and water courses *Melaleuca genistifolia,* which is here only a tall bushy shrub. On the downs we noticed *Teucrium argutum, Rhynchosia minima* and a few other plants which are common everywhere.

We now arrive at Wills' Station (Culinlaringo) about thirty miles from Emerald, where we were hospitably entertained. On the following morning we started for Springsure by the near road which goes through the "Gap," shorter by four or five miles than the road via Fernlees. The scenery from Wills' to Springsure is delightful; for the greater part of the way the track runs along a narrow valley between two steep ranges, where the botanist can fully occupy his mind, especially when he has to steer a vehicle over a rugged bush track.

Being now in the Springsure district I shall notice the Orders represented separately, in order to give the reader a more accurate idea of the botany of the district. But it must not be taken for granted that this includes the whole of the Springsure Flora, as our observations were necessarily confined to a few spots; indeed I am fully convinced that, if properly explored, the ranges in the neighbourhood would yield many rare plants, and probably new and interesting species.

In the *Leguminosæ* we noticed *Acacia salicina* in several places along the road, where it attains a height of 40 to 50 feet. It is a very variable species and is widely distributed in Queensland, and yet it is perhaps the most easily recognised of all its congeners. *A. excelsa* is also common here, and approaches to a height of 50 feet, and though somewhat resembling the last named species it is easily distinguished from it. The thorny *A. Farnesiana* is common on the downs, and never exceeds a height of four or five feet; its flowers yield a delicious perfume. This shrub is known as the "Dead Finish" in the southern parts of the Colony, though it does not occur there, and evidently the name should apply to *Albizzia basaltica*, which is the true "Dead Finish." In the Government Exhibition Catalogue the wood mentioned as *Acacia Farnesiana* is evidently *Albizzia basaltica*, as the former species never attains a size to produce wood of any use, and neither of the two appears to be found in the neighbourhood of Brisbane. Trifling as these errors appear, they not unfrequently lead to several awkward ones. We found the pretty little *Acacia conferta* among the sheltered ranges near Minerva Creek, where, covered with a profusion of golden yellow flowers, it lent a charming effect to the landscape. It is a pretty shrub of four to five feet, the small lanceolate leaves crowded on the branches, and not exceeding three or four lines in length. I subsequently found this species at Duaringa near the Dawson River. We found two other species of *Acacia* here, one a middle-sized, spreading tree resembling *A. macradenia;* the other a shrub or small tree with short, broad, oblique phyllodia and flowers in short cylindrical spikes of about an inch and a half in length; this shrub is found on the summit of the ranges. *Albizzia basaltica* or "Dead Finish" is also of frequent occurrence; the wood is red, with a fine straight, silky grain, and is valued for making stock-whip handles and fancy articles. We also noticed *Hovea longipes*, a pretty shrub with a profusion of bright blue flowers; the young pods of this shrub are eaten by the aborigines. The following are of frequent occurrence among the ranges: *Crotalaria trifoliastrum, C. juncea, Erythrina vespertilio* or "Cork-tree," *Psoralea tenax, Cassia eremophila* and *C. concinna* (which deserves cultivation) and *C. australis* which is common in all the scrubs in the neighbourhood. *Indigofera pratensis* deserves to be cultivated, and we also saw *I. linifolia, I. enneaphylla*, and *I. hirsuta* which is a common weed. The curious little *Zonia diphylla* and the pink-flowered *Lotus australis* were also noticeable, and on the gravelly ridges among the ranges we found a shrubby species of *Atylosia*.

Of *Apocynaceæ* we only found *Alyxia ruscifolia*, a handsome shrub with small, dark green, pungent leaves, and white fragrant flowers, which are succeeded by large, red, milky berries. *Asclepiadaceæ* we found represented by *Cynanchum floribundum*, a perennial milky twiner with large bunches of lilac flowers and peculiar capsules of nearly three inches in length; it is well worth cultivating. The only other plant of this Order we saw was *Secamone elliptica*, a tall milky climber of frequent occurrence in most scrubs. Of *Campanulaceæ* or the Blue-bell family, we only found the ubiquitous blue-flowered *Wahlenbergia gracilis*, and the more rare *Isotoma axillaris* with large, purplish, bell-shaped flowers. This pretty little plant is found hanging from cliffs, and always in company with *Psilotum triquetrum;* it would be very ornamental for rock-work. The last named plant belongs to the *Lycopodiaceæ* or "Club-mosses" and it deserves a place among every collection of plants: it is also found growing on trees in dense mountain scrubs throughout the Colony, as well as in New South Wales. As far as we saw, the *Filices* or ferns are but poorly represented around Springsure, but evidently a number of them must exist in the deep moist gorges at the head of the creeks, which we had not an opportunity of exploring. We only found *Pteris tremula*, *P. falcata*, *Adiantum hispidulum* and *Platycerium alcicorne* or "Elk's-horn," ferns that are common throughout the Colony. The *Urticeæ* or Nettle tribe we only found represented by *Ficus platypoda*, (which is mostly parasitical) and *F. Cunninghamii*, a large deciduous tree common in the humid jungles along the coast; the fruit of neither species is edible.

Among the *Proteaceæ* the graceful *Hakea lorea* was the most conspicuous, its long, wiry, pendulous leaves hanging in bunches from the ends of the branches, resembling large chandeliers. *Persoonia falcata* is a remarkable stunted little tree, and it cannot be mistaken once it has been seen. The bark is dark and rough, leaves long and falcate, reminding one of the phyllodia of some Acacias, and the flowers are pale yellow, in long rigid racemes. I am not aware that this species is found east of Cometville, and it was hitherto unknown south of Rockingham Bay. *Grevillea striata* with its long strap-like leaves is common in this district, but besides that species we saw but one other, without flowers, resembling *G. polystachya*, which is found in the neighbourhood of Emerald. Like most places in Australia the

Myrtaceæ are well represented at Springsure, but chiefly by *Eucalyptus*, of which we found the following species, *E. terminalis*, *E. melanophloia*, *E. crebra*, *E. brachypoda*, *E. tesselaris*, *E. tereticornis*, *E. citriodora*, and a species belonging to the Section *Micranthera*, resembling *E. brachypoda*, but the capsules are much larger and the leaves dotted: it is confined to the sides of the ranges. *Leptospermum attenuatum* is plentiful on the sides of the ranges, where it attains the size of a small tree; the bark is soft and lamellar, like that of *Melaleuca leucodendron*.

Hanging from the naked cliff to a length of six or eight feet we found a *Callistemon* resembling *C. lanceolatus*, with narrow acuminate leaves and yellow anthers. I have never known *C. lanceolatus* to be found except where its roots can reach the water, but Baron Mueller, after comparing the Springsure plant with the other Australian species, assures me that it is only a form of *C. lanceolatus*. We also noticed *Melaleuca trichostachya* and *M. genestifolia* in several places.

The *Rubiaceæ* we found represented by *Pomax umbellata*, which is always found in the crevices of cliffs in elevated situations. *Psichotria daphnioides*, the remarkable stunted little tree, *Cœlospermum reticulatum*, and the humble little *Asperula conferta*. Of *Sterculeaceæ* we only found *Sterculia rupestris* or Bottle Tree, *S. diversifolia* and the showy little shrub *Melhania incana*, which is common throughout the Colony. Among the *Labiatæ* we noticed the fragrant plants *Plectranthus parviflorus* and *Anisomeles salvifolia* very plentiful among the ranges; the latter plant would yield a delicate perfume. We found *Teucrium racemosum* at Minerva Creek, and *T. corymbosum*, and *T. argutum* at Springsure; the latter has rose-coloured flowers, and the two former species white flowers. We found the *Sapindaceæ* represented by *Nephelium connatum*, a middle-sized tree bearing edible fruit, *Heterodendron oleifolium*, a tree common in the brigalow scrubs, *H. diversifolium*, a tall shrub, the leaves of which are toothed like those of a holly, *Dodonæa viscosa* and *D. filifolia*. The hop-like capsules of the Dodonæas are used as hops, and are said to be a very good substitute. The *Compositæ* are generally well represented everywhere. *Cassinea lævis* is a pretty, slender shrub three to five feet high, with small linear leaves, and cottony-white all over; it is not very plentiful, but we found another species (I believe *C. aculeata)* very plentiful among the ranges. The leaves of these shrubs are fragrant, and they deserve cultivating. The straggling shrub, *Olearia stellulata*, and the tall, fragrant plant *Monenteles glandulosus* are common in the bushes. *Monenteles sphacelatus*, *Wedelia aspera*, *Brachycome graminea*, *Calotis hispidulum C. scabiosifolium*, and the pretty yellow-flowered *Ixiolena tomentosa* make up our list of Composite plants. Of the *Ampelideæ* or Grape Vine family we only found *Vitis oblonga*, which climbs to the tops of the tallest trees, and the herbaceous *V. climatidea*, which produces small edible tubers. Like the *Leguminosæ* the *Myrtaceæ* and the *Compositæ* we found the *Euphorbiaceæ* well represented, but only by a few genera. The handsome fragrant flowered shrub, *Securinega leucopyrus* is of common occurrence, and the ubiquitous *Petalostigma quadriloculare*, the bark of which is used as a febrifuge, is very common.

The poison plant of the coast district, *(Sponia aspera)* is very plentiful among the ranges, and we found the middle-sized tree, *Bridelia tomentosa*, in the scrub at the base of the mountain, near Springsure. We found a species of *Bertya* which we had not seen before, on one of the ranges; the young branches are tomentose, leaves oblong-lanceolate, obtuse, with a broad, almost cordate base, half to one and a half inch long, on short petioles, cottony-white underneath, the margins revolute, prominent midrib, and numerous almost transverse veins; young fruit glabrous, ovoid, obtuse, sessile in the axils, with four or five small, tomentose, calyx-like bracts; we saw no flowers. We found *Euphorbia eremophila* near Minerva Creek, and *E. pilulifera* and *E. Drummondii* are common at Springsure. The former species is perennial, and has thick, fleshy roots; *E. pilulifera* is now a well known remedy for asthma, and *E. Drummondii* is said to be an infallible remedy for dysentery and low fever; but it is also said to have proved poisonous to sheep on the Barcoo. Of the *Acanthaceæ* or Acanthus family we only found two very common representatives, namely *Ruellia australis* and *Justitia procumbens*. *Thymelaceæ* are a remarkable Order in Australia; it consists of three genera, one of which *(Wikstroemia)* has but a single species, *(W. Indica)* only occurring in Queensland and New South Wales; *Phalaria*, the second genus, has but three species, which only extend southward to Rockingham Bay; while the third genus, *Pimelea*, is found throughout Australia as well as in Tasmania, and 67 species are already described in the *Flora Australiensis*. But though numerous in species the Pimeleas are nowhere plentiful, and we were agreeably surprised to discover three species in the Springsure district, namely *Pimelea glauca*, a very pretty, white-flowered plant suitable for cultivation, *P. haematiostachya* a beautiful, red-flowered species, and *P. leptostachya* with small yellowish-green flowers. Except by the botanist the last-named species would never be taken for a *Pimelea;* it is said to have been found at Rockhampton by Bowman, but I have never seen it there.

Of *Solanaceæ* we found *Solanum ellipticum*, *S. stelligerum*, *S. esuriale* and another species which does not appear to be described. It is annual, and seldom exceeds six or eight inches in height; the leaves are six to eight inches in length and three to five inches in breadth; flowers large, violet; fruit large, green. *Nicotiana suaveolens*, (native tobacco) and *Datura Leichhardtii* or Thorn Apple are the only other members of this Order we found. The native Thorn Apple would be worth trying in asthmatical complaints. We found *Meliaceæ* represented by *Melia composita* or White Cedar, which is here a great favourite in cultivation; it is quite deciduous, and is one of our most beautiful flowering trees. *Flindersia maculosa* or "Prickly Pine" and *Owenia acidula* or "Emu Apple" are mostly confined to the brigalow scrubs in the neighbourhood, and these with the pretty shrub *Turraea pubescens* make up our list of the *Meliaceae*. The last-named shrub is deciduous, its white fragrant flowers appearing with the young leaves, and it is entirely peculiar to Queensland. *Bignoniaceæ* are but a small Order in Australia, and it is mostly confined to Queensland. Of the two Tecomas found in Australia, one, *Tecoma australis*, is common at Springsure. The flowers of this climber have a most disagreeable smell. *Geraniaceæ* we only found represented by the humble *Oxalis corniculatus* (the "Sour Grass" of the Colonists); and *Linaceæ* or the Flax tribe, have also but a single representative, *Erythroxylon australe*, a shrub very common in the brushes along the coast. It would be interesting to know if this species possess any stimulating properties like its congener *E. coca*, of South America.

The *Capparideæ* are represented by three genera, *Capparis*, *Apophyllum* and *Gynandropsis*. *Capparis canescens* and *C. Mitchellii* are common, and *C. Shanesii* is less frequent, and of recent discovery; the fruit of these shrubs is known by the name of "Native Pomegranates" and the pulpy part in which the seed is imbedded is a good substitute for mustard. *Apophyllum anomalum* is a most remarkable shrub, and will be readily recognised in the brigalow scrubs by its wiry, leafless branches and small pea-like fruit; it is the only known species. *Gynandropsis pentaphylla* is more rare, but is always met with in old sheep yards. It is an herbaceous plant, and its long pod-like capsules, which have a pungent taste, could be used for pickling. The only members of the *Rutaceæ* we saw, are *Geijera parviflora*, a tall shrub peculiar to the brigalow scrub and *G. salicifolia*. a handsome middle-sized tree; the old name *G. latifolia*, would be much more appropriate for this tree. The *Myoporineæ* have but a single representative, *Eremophila Mitchelli* or "Bastard Sandal-wood," which is common in all the brigalow scrubs. We found several species of *Malvaceæ*, which are generally plentiful everywhere. *Gossypium (Fugosia) australe* is a shrub of three to four feet high, with pink flowers resembling those of an *Hibiscus;* it is found on dry ridges near Springsure and also at Cometville. The writer has discovered another species of *Gossypium* near Emerald, but it cannot be specifically determined until flowers shall have been seen; the leaves are orbicular and peltate. The other Malvaceous plants found are *Malvastrum spicatum*, a common weed, *M. tricuspidatum*, *Hibiscus heterophyllus*, a tall shrub with pink or white flowers, *H. trionum* a low shrub with pink flowers, *H. ficulneus* and *H. vitifolius*. The last-named species is the most remarkable of its congeners. Its leaves are covered with pungent hairs which run into the flesh and cause considerable pain; the flowers are of a sulphur colour and the capsule is winged. *Sida corrugata* and *S. subspicata* make up our list of this enteresting Order.

Of the *Umbelliferæ* we found *Hydrocotyle hirta* and a species with orbicular, peltate, and deeply cut leaves, which we had not seen before, but not having seen the flowers we are unable to determine the species. *Daucus brachiatus* or native carrot, is not unfrequent, and sheep and cattle thrive wonderfully where this plant is plentiful. The *Lythraceæ* have but a single representative, *Lythrum hyssopifolium;* and the *Juncaceæ* or rush tribe are also but few. Of this Order we only saw *Juncus pallidus*, *Xerotes longifolia*, and a species of *Xanthorrhoea* or Grass-tree on the summit of the ranges. *Caryophyllaceæ* are only represented by *Polycarpaea corymbosa*, and *Ebenaceae* by *Maba obovata*, a small tree. Of *Lobeliaceae* we only found the common plant *Pratia erecta*, (*Lobelia concolor*, R. Br.)

The *Ranunculaceæ* or Crow-foot family are rare in Queensland, and the only representative we found is *Clematis microphylla* or "Traveller's Joy" which covered the bushes with its slender twining branches. *Verbenaceæ* is represented by the common blue-flowered weed *Verbena officinalis* or "Vervain," and the beautiful flowering shrub *Clerodendron floribundum*, which is here mistaken for the "Bitter-bark" *(Alstonia constricta).* Of *Goodenoviæ* we only found the pretty undershrub *Goodenia grandiflora,* which is very common in the brushes; and *Scrophulariaceæ* are represented by the rare little plant *Striga curviflora,* which I have only noticed at Rockhampton. *Trichodesma zeylonica* is the only plant of the *Boraginaceæ* we saw; and of *Nyctagineæ, Boerhaavia mutabilis,* a common weed, said to be an effectual remedy for measles. The *Convolvulaceæ* are plentiful in most parts of Queensland, but here we only found the creeping little plants *Polymeria pusila* and *Convolvulus erubescens,* and the ubiquitous *Ipomæa plebeia,* which bears small white flowers. Of the *Chenopodiaceæ* or Goose-foot family we saw the tall fragrant weed *Chenopodium ambrosioides* and *C. auricomum* or "Fat Hen," which is used as a culinary vegetable, also *Salsola Kali* "Saltwort" or "Rolly polly," and a species of *Sclerolaena* or *Anisacantha* which we had not seen before. This plant has the woolly heads of the former genus but the spines of the latter. The representatives of the *Amaranthaceæ* are only common weeds, namely, *Amaranthus macrocarpus, A. Blitum* and *Achyranthes aspera.*

Menispermaceæ are represented by the tall twiner *Stephania hernandiaefolia,* which we found at Minerva Creek; *Casuarineæ* by *Casuarina glauca* or "Scrub oak"; *Stackhousiæ* by the pretty plant *Stackhousia monogyna; Santalaceæ* by *Santalum lanceolatum,* "Sandal-wood"; and *Commelynaceæ* by the blue-flowered *Commelyna cyanea.* Of *Cucurbitaceæ* we only saw the annual twiner *Bryonia lacinosa,* which bears large variegated berries. We only saw two representatives of the *Polygonaceae* or "Dock" family, namely, *Meuhlenbeckia Cunninghamii* (the "wiry polygonum" of Australian explorers) and *Rumex Brownii.* Of *Cyperaceae* we noticed *Scirpus lacustris* or "Bulrush" in wet places, and one or two species of *Cyperus.* Of *Typhaceae* the only species known in Australia are *Typha angustifolia* or "Reed Mace" and one species of *Sparganium.* The former is found near Springsure, and is common throughout Australia and Tasmania; it is also very common in the British Isles. We have not as yet noticed the *Cycadaceae*, of which we saw but one representative, namely, a species of *Macrozamia*, respecting which there is evidently some mistake. *M. spiralis* is mentioned in the *Flora Australiensis* as having been found at Springsure by Dr. Wuth, but the common one in that neighbourhood is evidently not that species, and most probably is the one mentioned from Springsure. The trunk of the Springsure plant attains at least a height of twelve feet, and is one foot thick; leaves four to five feet long, the rachis flat, and one inch broad between the pinnæ near the base, with a broad longitudinal furrow along the centre on both sides; longest pinnæ about the middle of the leaf twelve to fourteen inches long and more than half inch wide, narrowed at the base and tapering into fine, straight pungent points: the lower pinnæ are much smaller, some not exceeding two or three inches in length. The upper scales of the male cones are large and thick, with rigid subulate points nearly two inches long; the lower scales are smaller and rather flat. Fruiting cones much larger than the males, twelve to eighteen inches long, and four to six inches thick; the apex of the scales nearly two inches broad, thick, and very convex, with rigid incurved points about one inch long, and decurrent along the centre of the scale on each side, forming raised angles or wings. The whole plant is apparently glabrous. This species is mistaken by horticulturists for *M. Perowskiana*, *(Encephalartos Denisonii)* from which however, it is entirely different, nor does it agree with any species described in the *Flora Australiensis.*

The *Gramineae* or Grasses only remain to be noticed, and they are, at least to the Squatter and the Selector, by far the most interesting family of indigenous plants. We found several species of excellent grasses on the downs, but those most highly prized for pasturage are *Andropogon sericeus* and *A. pertusus.* These are known by the name of Blue Grass, and are considered superior to the other grasses for fattening stock. *A. refractus* is a tall fragrant grass, but it is not relished by stock. It may be recognised by its white, woolly seed-heads, and the seeds as it were broken downwards, from which this species derives its name. *A. bombicinus* is the most conspicuous grass in the district, but, like the preceding species, it is not at all relished by cattle, and it will be recognised by its long erect spikes of wool seeds. The "Spear-grass," *Heteropogon contortus*, is common on the downs, though not plentiful, and but for its destructive seeds is one of our best pasture grasses. *Chrysopogon parviflorus* is a pretty grass, and cattle are fond of it, but it is not plentiful in this district. *Cenchrus australis* affects moist banks, and is a very nutritious grass, but its long spikes of clinging seeds prevent cattle from feeding on it. We also noticed the two pretty little grasses *Lapago racemosa* and *Perotis rara;* regarding the latter species I have noticed in the present dry season that goats will not eat it even in places where there are no other grasses. *Pollinea fulva* is a good perennial grass, and its long tawny spikes are very conspicuous among the other herbage. *Panicum decompositum* and *P. trachyraphis* are excellent perennial grasses, and they yield a large quantity of forage; the latter species is the prevailing grass on the downs. The tall perennial grass *Ophiuris corymbosa* is also common, but is not suitable for pasture; it is the only species found in Australia. We found the tall ornamental grass, *Leptochloa subdigitata,* near Wills' Station, and a species of *Spinifex,* probably *S. Cunninghamii,* on the summit of the ranges near Springsure, and these with *Cynodon dactylon,* "Couch Grass," *Imperata arundinacea, Arundinella Nepalensis* and two or three species of *Aristida* make up our list of native grasses. When properly explored the Springsure mountains will evidently yield several other rare plants, and a week would be profitably spent among them.

NOTE ON PALMERIA OF THE MONIMIACEÆ.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

Since the publication of the fifth volume of our *Flora*, it has been ascertained that the straggling shrub, known as *P. racemosa*, (DC.), occurs in the creeks near Lane Cove, and also in the gullies on the Blue Mountains. Only female flowers, and those very small, have been found in the latter locality. Mr. Bentham in his note on *P. racemosa*, expresses an opinion that the specimens from the neighbourhood of Parramatta and also from the Blue Mountains may really belong to the Northern species *P. scandens* (F.v.M.). The principal mark of distinction between the two species is the number of stamens in the male flowers, *P. scandens* usually having only about 20, and *P. racemosa* 60 or more, whilst the foliage, inflorescence, and indumentum are pretty much the same. Within the last year, it has been found that *Palmeria* extends to Illawarra, and from specimens which I forwarded to Baron F. von Mueller, that eminent Botanist inclines to the opinion that the two species must be united, as from an examination of the male flowers, he finds that the Illawarra plant is intermediate in the number of the stamens. It would appear that Mr. Bentham had no opportunity of seeing the specimens of Baume and Huegel, and it was only from Tulasne's description (which represents *P. racemosa* as a tree !) that he inferred a real distinction between *P. scandens* and *P. racemosa*. Perhaps it may be premature to express a decided opinion, but it seems from the material now procured that the *Palmeria* ranging here and there form Rockingham Bay to Illawarra is in fact only one species.

SPECIES OF ALSOPHILA IN NEW SOUTH WALES.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

There is great difficulty in distinguishing the species of *Alsophila* when seen only in dried specimens, and hence the late

Sir W. Hooker, as well as Mr. Bentham, has apparently reduced to one species the different forms indigenous in New South Wales. In the *Species Filicum*, Vol. I., *A. australis*, is the only one described, whilst, in the *Flora Australiensis* Vol. 7, Mr. Bentham remarks under his description of that species, "It is possible that the study of living specimens in their native stations may show characters for distinguishing more than one species, but, as far as known, the differences in the trunks do not correspond with the very indefinite differences in the fronds." The fact is that our species are more easily recognised by the nature of the caudex and the peculiarity of habit than by any technical description of the fronds, especially when represented by dried specimens only. Accurate observers, however, (such for instance as the late Mrs. Calvert and Sir William Macarthur) have uniformly given three species for New South Wales, and, strange to say, that opinion is confirmed by the Aboriginal natives, who, in the Southern parts of the Colony, speak of the three by the names "*Beeow-wang*," "*Yarrah-wah*," and "*Denn-nangue*." And I may add, that, in Conservatories in the neighbourhood of Sydney, three distinct forms may be seen as representing the *Alsophilas* of the Colony. *A. excelsa*, is the most robust of the species and of rapid growth, but it seems doubtful, whether, in its typical character, it extends beyond Norfolk Island, where it is said to have attained the height of 80 feet. *A. Loddigesii*, (Kunge), which was established on some specimens procured at Cape Byron by Mr. C. Moore, seems to be regarded by Mr. Baker as a variety of *A. australis*, from which it differs by its shorter, broader segments, and fewer veins. Without reckoning these, I believe that *A. australis* (R. Br.), *A. Leichhardtiana* (F.v.M.), and *A. Cooperi* (Hook.), are good species. The first is the most common, and occurs here and there from the Coast to the Blue Mountains, rising on Mount Tomah to 40 or 50 feet. The fronds are, for the most part, pale or glaucous on the under surface, and the rachis is rough or muricated. *A.*

Leichhardtiana is much more slender than *A. australis*, and differs from it in the dark purple colour of the raches, the lanceolate oblong, somewhat falcate form of the segments, which are sharply serrated, especially at the apex, and the more forked character of the veins, whilst the base of the stipes is covered with long brown setaceous hairs. Sir W. Macarthur speaks of this fern as a "very slender-growing species, the midribs of the fronds dark purple, and very spiny." *A. Cooperi*, which Mr. Bentham unites with *A. australis*, is principally known from Illawarra and the Kurrajong, growing in company with *A. Leichhardtiana* and *Dicksonia antarctica*, especially on the banks of creeks or gullies of the trap formation. Baron F. von Mueller has described this fern in the *Fragmenta Phytographiæ Australiæ* (Vol. 5, p. 117), and it is also described from specimens of Dr. Darra Moore in Hooker's *Synopsis Filicum*, p. 459. At Cabbage Tree Hollow on the Blue Mountains, *A. Cooperi* sometimes attains a height of 20 feet with a circumference of 8 or 9 inches. The caudex is not so stout as that of *A. australis*, nor are the fronds generally so large. It is well distinguished by the pale oval scars, caused by the annual falling off of the fronds, which is not the case in the allied species. The fronds are not so thick in texture as those of the the others, the raches are straw-coloured, much smoother than those of *A. australis* and *A. Leichhardtiana*, and the veins are usually more forked than in the former; whilst (so far as I have observed on the Blue Mountains) the sori are larger and eventually cover nearly the whole of the under surface. Besides the oval scars of the caudex, which seem to mark this species and impart a peculiar character to it, the chaffy scales are remarkable. These, (intermixed with dark brown setaceous ones, clothe the raches of the younger fronds and are similar to those of *A. excelsa*. Sir W. Macarthur characterizes *A. Cooperi* as "a beautiful species, the stem cylindrical, the midribs of the fronds yellow and quite smooth." There may be some difficulty in distinguishing some of its fronds from those of the allied species, as they appear in herbaria; but the oval scars of the caudex and the chaffy scales of the rachis, as they appear in living specimens, must entitle it to be regarded as a distinct species.

DESCRIPTION OF A NEW SPECIES OF APSEUDES.

[Plate VI.]

By WILLIAM A. HASWELL, M.A., B.Sc.

Apseudes obtusifrons.

Head as long as the two following segments, crossed by oblique grooves in the form of an X; rostrum short, rounded. Pleon as long as the four last segments of the pereion, ciliate at the sides, the last segment short, its apex bifid. Upper antennæ with the peduncle very stout, first segment nearly as long as the head, second segment about a third of the length of the first, third segment small; flagellum shorter than the peduncle, with nine segments; secondary flagellum with six segments. Outer antennæ rather longer than the peduncle of the inner; basal and second joints of the peduncle thicker than the rest, each with a small ovate, ciliated process; third and fourth joints very small, fifth greatly elongated; flagellum with six segments. Mandibles with the palp short, uniarticulate. Maxillipedes richly ciliated internally. First pair of legs with the propodos oval, produced below into a finger which has two low tubercles at its base; both carpus and propodos thickly clothed with long slender hairs. Second pair of thoracic limbs expanded and foliaceous; carpus with two short stout spines on its outer border; propodos with four longer spines on its outer border and another internal to the insertion of the dactylos; dactylos taking the form of an ovate plate, closely fringed terminally with fine hairs. Third and fourth pairs of thoracic appendages similar, with the propodos rather short, the dactylos long and very slender; fifth and sixth pairs with the propodos longer, armed with straight setæ; dactylos very small, penicillate; last pair smaller than the rest. Inner flagellum of caudal appendage with 17 joints; outer very short, two jointed. Length ⅜ths inch.

Hab. Port Jackson (dredged on a sandy bottom).

EXPLANATION OF PLATE VI.

Fig. 1. *Apseudes obtusifrons* × 8.
,, 2. Upper antennæ × 22.
,, 3. Lower antennæ × 22.
,, 4. First pair of thoracic limbs × 22.
,, 5. Second pair × 22.
,, 5′. Extremity of the same × 44.
,, 6. Third pair of thoracic limbs × 22.
,, 7. Fifth pair × 22.
,, 8. Caudal appendages × 44.

NOTES AND EXHIBITS.

The Honble. William Macleay exhibited a large specimen (about six inches in diameter) of *Mylitta australis* a fungus of the Truffle family, generally known under the name of "Native bread." He stated that the specimen had been dug up on the Blue Mountains by the Honble. James Norton, and he expressed a doubt as to its edible qualities, notwithstanding the name given to it.

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WEDNESDAY, OCTOBER 26TH, 1881.

The President, J. C. Cox, M.D., F.L.S., &c., in the Chair.

MEMBERS ELECTED.

Messrs. James Conway, Alexander Morton, Paul Fittel, Fredk. Williams, and the Honble. J. Malbon Thomson.

DONATIONS.

Archives Neerlandaises des Sciences Naturelles Vol. 16, part 2.

Journal of Conchology for Dec. 1879 and Jan. 1881.

On Fossil Chilostomatous Bryozoa from South West Victoria, by A. W. Waters, F.G.S.

PAPERS READ.

DESCRIPTION OF SOME NEW SPECIES OF AUSTRALIAN DECAPODA.

BY WILLIAM A. HASWELL, M.A., B.SC.

1. Paramithrax Coppingeri, *sp. nov.*

Carapace armed in the middle line with four spines, the first two large and placed near one another on the middle of the gastric region; the remaining two small, and situated near the posterior border; between the two pairs, on the cardiac region a transversely-placed pair of divergent spines, the bases of which nearly meet in the middle line. Two prominent spines directed upwards, backwards, and outwards on each branchial region. Rostral cornua very long, slender, and slightly knobbed and incurved at the extremity. Upper orbital border with three straight, acute, spinous teeth, behind which are two post-orbital spines separated by deep fissures from one another and from the upper orbital border; the posterior spine the larger, broad, compressed, and obliquely truncate. A prominent, sometimes sub-bifid tooth behind this on the border of the hepatic region. Basal joint of the external antennæ with a short tooth at the proximal end of its outer border, with a very prominent compressed tooth directed outwards at the distal end of the same border, and a third, somewhat smaller, directed downwards and forwards at the inner and distal angle; flagellum longer than the cornua of the rostrum. Merus of chelipedes armed above with four compressed teeth of which that situated at the distal end is very prominent; carpus with two denticulated crests. First pair of ambulatory legs a little longer than the chelipeds; all the ambulatory legs armed at the extremity of the merus with a long, slender, cylindrical spine which (like the spines of the carapace) is slightly knobbed at the apex. Length one inch.

Port Molle, Whitsunday Passage. (W.A.H., H.M.S. "*Alert.*"

This species belongs to the same section of the genus as *P. aculeatus*, *P. longispinus*, *P. spatulifer*, *P. acanthonotus*, *P. verrucosipes*, and *P. halimoides;* its nearest ally being *P. longispinus*, De Haan, from which it is distinguished by having none of the supra-orbital spines recurved. In the structure of the antennary region it approaches *Chlorinoides*, mihi, but like the rest of the species mentioned has the ambulatory legs much shorter than in that genus.

2. Euxanthus maculatus, *sp. n.*

Surface strongly embossed, the bosses prominent, rugose or punctate. Front deflexed, bilobed. Supra-ciliary border very thick. Anterior half of antero-lateral border entire, posterior with three indistinct teeth. Chelipedes very rugose externally, hand with longitudinal rows of pits on it outer suface. Ambulatory legs granular. Colour light red with darker blotches.

Darnley Island, Torres Straits (Macleay Museum).

3. Carpilodes granulosus, *sp. n.*

Carapace very broad, convex, strongly embossed anteriorly, covered with extremely minute granulations, and with a few scattered punctations, more numerous near the anterior and antero-lateral borders; inter-lobular grooves well-marked; proto-gastric lobes divided by a longitudinal groove; epi-gastric lobes prominent, distinctly marked off from the proto-gastric; meso-gastric prolonged to a point between the latter, the grooves defining it prolonged backwards to join the branchio-gastric groove; gastric region well separated from the cardiac. Front four-lobed, the outer lobes very small. Antero-lateral borders divided into four teeth. Chelipedes sub-equal, ornamented with a few scattered punctations. Carapace light brown with darker blotches; fingers of the chelipedes of a dark brown, which is prolonged a little on the inner and outer surfaces of the propodos.

Torres Straits (Macleay Museum).

4. Cycloxanthus punctatus, *sp. n.*

Carapace with the regions well defined, ornamented with scattered punctations; front very prominent, entire, deflexed; antero-lateral borders forming a re-entering angle with the front, strongly arched, with four faintly-marked lobes. Chelipedes closely pitted externally, so as to appear reticulated. Ambulatory legs compressed, ornamented with scattered punctations; terminal joint with four longitudinal ribs or carinæ.

Parramatta River (Macleay Museum).

5. Liomera maculata, *sp. n.*

Carapace very wide, convex, smooth and shining, punctate close to the anterior border, the regions but faintly indicated. Front rather deeply incised, the lobes rounded. Antero-lateral margins with three obscure lobes, the last marked off behind by a short groove, and separated from the second by a longer and deeper groove. Internal angle of lower orbital border tooth-like. Hand with a few longitudinal rows of minute punctations on its outer surface; fingers pointed. Ambulatory legs smooth and shining, the upper and lower borders of the terminal joint tomentose. Carapace and legs light cream colour, the former ornamented with numerous round red spots, and with three large more diffuse blotches on the anterior portion; fingers light brown except at the base, which partakes of the general ground colour; ambulatory legs each marked with two transverse bands of red.

Endeavour River (Macleay Museum).

6. Pilumnus Terræ-Reginæ, *sp. n.*

Carapace convex, ornamented with scattered stiffish hairs, a patch of small granulations on the mesobranchial regions, and a few others on the gastric region. Front rather deeply incised. Antero-lateral borders with three prominent, acute, spiniform teeth behind the orbital angle. Carpus of chelipedes with a few granules on the outer surface, more prominent on the smaller chelipede; hand ornamented with numerous rounded granules externally, more prominent and pointed on the smaller hand; a row of obscure granules on the lower border of the merus and hand of the smaller chelipede; two or three obsolescent granules in the same position in the larger chelipede. Ambulatory legs with scattered stiffish hairs. Length $\frac{7}{16}$ inch; breadth $\frac{4}{16}$. Colour reddish purple on the carapace; light red on the legs; fingers brown.

Port Molle.

The nearest ally of this species appears to be *P. purpureus*, A. Milne-Edwards, from which it is mainly distinguished by having the granulations on the carapace always numerous and small, instead of few and large.

7. Pilumnus vestitus, *sp. n.*

Allied to the preceding, and resembling it exactly in the form of the front and the arrangement of the lateral spines or teeth; but distinguished from it by having the surface without distinct granules, and by having the tubercles of the chelipedes few in number and mostly spiniform. Carapace and legs covered with stiff yellow hairs. Surface of carapace mottled with red or purple. Fingers dark brown. Length $\frac{9}{16}$ inch; breadth $\frac{11}{16}$.

Port Jackson; Port Stephens.

8. Caphyra octodentata, *sp. n.*

Carapace colourless, thin, smooth, and shining. Front notched mesially, divided into four pairs of teeth, of which one occupies the internal orbital angles, and is separated from the inner three by wide angular fissures. Antero-lateral borders with four acute teeth; a very obscure raised line crossing the carapace inwards and slightly backwards from the last tooth. Merus of chelipedes with three or four small acute teeth on its inner border; carpus with an acute prominent spine above; propodos carinated above, the carina divided into two teeth, of which the posterior is very acute; external surface of the propodos with an acute spine at its base.

Palm Island (East coast of Queensland), (Macleay Museum).

This species is allied to *C. lævis*, A. Milne-Edwards, but differs from it in having only four teeth on each lateral border; from *C. rotundifrons*, of the same author, it differs in having the front dentate, and from *C. polita*, Heller, in not having a ridge on the gastric region, besides other points.

9. Hymenosoma australe, *sp. n.*

Carapace sub-orbiculate, the length (exclusive of the rostrum) a little less than the greatest breadth. Rostrum prominent, deflexed, its upper surface concave from side to side, bordered laterally by a raised ridge, which terminates near the extremity in a slight enlargment; extremity in the form of an obtuse angle. Lateral borders of the carapace with two obscure teeth. Chelipedes of the male extremely large; propodos dilated, smooth, rather sharp-edged below; fingers gaping at the base. Chelipedes of female small; hand not dilated; fingers straight. Length ½ in.

Williamstown, Port Philip.

10. Phlyxia Petleyi, *sp. n.*

Carapace rhomboidal, in general outline similar to that of *P. lambriformis*. Front emarginate; antero-lateral borders with three conical teeth, the first rather larger than the others. a fourth smaller tooth at the junction of the antero-lateral and postero-lateral borders; postero-lateral border with three compressed conical teeth; three prominent, sub-equal, conical teeth behind, the mesial tooth situated above the other two, the latter situated immediately above the insertion of the abdomen. Upper surface closely granulated, a broad smooth longitudinal ridge on the gastric region, followed by a row of three conical tubercles; on either side of the posterior portion of the mesial ridge, an ovoid tubercular eminence, with the long axis longitudinal; branchial region with a few small tubercles. Arm, carpus, and propodos closely granulated, the granules on the first coarser than those on the two last; dactyli finely toothed, incurved at their points. Abdomen (female) covered with flat granules, a small tooth in the middle of the distal border of the composite segment.

Port Molle (Whitsunday Passage), fourteen fathoms.

A second, smaller, male specimen from the same locality, differs from this mainly in having the upper surface of the carapace free from granulations.

11. Dromia australiensis, *sp. n.*

Carapace longer than broad, evenly convex above, covered, together with the under-surface and limbs, with adpressed hairs. Front strongly deflexed, three-toothed, the mesial tooth small, rounded, directed downwards, not visible when the carapace is viewed from above, the lateral teeth more prominent, obtuse. Upper orbital margin very prominent, forming a rounded lobe; infra-orbital tooth prominent, conical. Antero-lateral border convex, with three teeth, the first of which is the largest, while the other two are sub-equal and rudimentary; a small tooth behind the cervical groove. Chelipedes slightly nodose. Length 1 inch; breadth $\frac{15}{16}$ inch.

Port Denison; Port Jackson.

12. Dromia octodentata, *sp. n.*

Carapace broader than long, evenly convex, shining, ornamented with numerous minute pores. Frontal teeth sub-equal, conical, the middle one directed downwards, a conical tooth about the middle of the upper orbital margin; infra-orbital tooth rather prominent. Antero-lateral border with four small conical teeth, the first separated by a short interval from the external orbital angle, and by a nearly equal distance from the second; third small, separated from the second by about twice the distance which separates the first two; fourth larger than the third, separated from it by an interval similar to that between the first and second; a little in front of the third tooth is a low rounded tubercle. An acute tooth immediately behind the cervical suture. An acute tooth at the distal end of the upper border of the carpus; hand with a row of about half-a-dozen granules above. Length 1½ in. in.; breadth 1⅝ in.

Adelaide (Australian Museum).

13. Dromia sculpta, *sp. n.*

Carapace about as broad as long, ornamented, as well as the limbs, with numerous rounded granules, but free from conspicuous hairs; gastric and anterior branchial and hepatic regions very prominent, tuberculated, each of the tubercles capped with a group of granules. Front very prominent, with three teeth, of which the mesial is the smallest, is triangular and sub-acute, directed slightly downwards, but quite visible when the carapace is viewed from above; lateral teeth each with an accessory denticle on its outer border (representing the supra-orbital tooth). External orbital and infra-orbital teeth rudimentary. Carpus of chelipedes with two prominent conical spines near the distal end of its upper surface; three similar spines or teeth on the upper surface of the hand, two close above the insertion of the dactylus, the third at the proximal end. Merus, carpus, and propodos of ambulatory limbs ornamented with a few short blunt spines or tubercles, and with a few scattered, short, hooked hairs. Segments of the abdomen (except the last) each ornamented with four compressed tubercles. Length of carapace $\frac{7}{16}$ in.

Port Jackson, in a few fathoms of water; Port Stephens.

14. Dromia conchifera, *sp. n.*

Carapace longer than broad, nearly flat above, very slightly convex. Lateral borders entire with the exception of a small tooth situated some distance in front of the transverse groove, and separating a convex antero-lateral portion from a longer postero-lateral portion, which is slightly concave in front and slightly convex posteriorly. Front tridentate, bordered with minute granules, the mesial tooth excessively minute, the lateral teeth dorso-ventrally compressed, triangular, acute; well developed supra-orbital and infra-orbital teeth. Under surface of the body and limbs rather closely covered with granules. Carpus of chelipedes with a prominent conical projection on its outer surface, and a smaller one internal to the first; hand ornamented with longitudinal rows of granules, two rounded tubercles above the insertion of the dactylus. Carpus of ambulatory limbs, except the last, each with a small conical tooth; fourth pair shorter than the third, but very stout, the carpus broad and thick with a deeply excavated "palm," bounded by a stout conical tooth set a right angles to the axis of the joint; dactylus very powerful, strongly curved, rather longer than the propodos. Whole surface covered with a short close green pubescence; dactyli and granules tinged with crimson. Length ⅔½ in.; breadth ⅝ in.

Port Denison, five fathoms; Port Molle, fifteen fathoms.

This species has the curious habit of protecting itself with the valve of a lamellibranch, which it holds tight over its back by means of its unusually powerful and specially adapted fourth pair of ambulatory legs.

15. Petrolisthes inermis, *sp. n.*

Carapace longer than broad, rather flat above, obscurely lineolate behind and at the sides. Front rather prominent, triangular, with a deep longitudinal mesial furrow. Anterior legs rather depressed, the carpus as long as the carapace, its anterior border acute, with a low tooth near its proximal end, its posterior border with two teeth, the second at the distal end, the first near it. Ambulatory legs transversely lineolate, free from teeth or spines. Length $\frac{5}{16}$ in.; breadth $\frac{1}{4}$ in.

Port Denison (Mr. Alex. Morton).

16. Porcellana pulchella, *sp. n.*

Carapace oval in outline; surface very obscurely lineolate; lateral margins entire. Front broad, nearly straight, but with a very obscure mesial lobe; inner orbital angles very slightly projecting. Chelipedes large, the right the larger; carpus strongly tuberculated above, armed with two conical teeth internally; propodos ornamented externally with four longitudinal ridges, strongly tuberculated in the smaller chelipede, nearly smooth in the larger, and separated by deep sulci. Ambulatory legs with a few obscure granules above. Length of carapace $\frac{1}{8}$ in. Colour cream colour, with six rounded orange spots on the carapace, and others on the chelipedes and ambulatory limbs.

Holborn Island, twenty fathoms; Port Molle.

This species is allied to *P. sculpta*, Milne-Edwards, but differs from it in having two teeth on the anterior border of the carpus; from *P. pisum* it is distinguished by the possession of the flat tubercles on the carpus, and the longitudinal sulci on the propodos.

17. Porcellana nitida, *sp. n.*

Carapace a little longer than broad, closely lineolate. Front prominent, trilobed, the central lobe much larger than the others, triangular, the lateral lobes very small; two acute teeth behind the orbit, and a rounded lobe on the lateral border a little further back. Carpus of chelipedes a little longer than broad, smooth, with a sharp entire internal crest; propodos smooth, narrow; fingers hooked and crossing one another at the tips. Length $\frac{1}{4}$ in.

Port Denison, five fathoms.

18. Porcellana vigintispinosa, *sp. n.*

Carapace faintly lineolate; front trilobed, the middle lobe sub-acute, more prominent than the lateral, which are obscure; four minute acute spiniform teeth on the lateral border just behind the eye, the last of the four the largest; further back and separated by an interval from these are six more acute teeth, the first three very small, the last three larger. Left chelipede larger than the right; merus strongly crested internally, the crest armed with one or two obscure denticles; carpus with a sharp crest, divided into three teeth in its proximal portion, entire in its distal portion; propodos rounded, smooth. Length $\frac{3}{16}$ in.

Holborn Island, twenty fathoms (Mr. Alex. Morton).

19. Porcellana corallicola, *sp. n.*

Carapace slightly tuberculated at the sides; the regions well marked. Front not prominent, triangular, with a deep longitudinal mesial furrow, its anterior border ornamented with minute denticles which are sometimes acute, sometimes obtuse. Lateral borders with four or five minute spine-like denticles situated about the middle of the branchial region. Carpus and propodos of chelipedes fringed externally with hairs, flat above, curved below; internal and external borders of carpus armed with a row of acute denticles; upper surface with three longitudinal rows of granules separated by sulci; hand compressed, triangular, with rows of granules; fingers compressed, granular, their inner borders nearly straight, their apices scarcely hooked. Length $\frac{3}{16}$ in.

Port Molle, on coral reefs.

20. Porcellana transversa, *sp. n.*

Carapace much broader than long, nearly smooth, lineolate behind, the regions faintly defined; protogastric lobes prominent.

Front not prominent, nearly straight; lateral margins entire, scarcely crested. Merus of chelipedes transversely lineolate, hairy; carpus one and a half times as long as broad, fringed with hairs on its inner border, which projects in the form of a crest, nearly smooth above; propodos thickly clothed with hairs externally, a longitudinal granular line at its lower border, running to the end of the immobile finger, which has a conical tooth at the base of its cutting edge, and is strongly hooked at its apex; mobile finger with a granular hairy ridge above, a slight conical tooth at the base of its cutting edge, and with the apex strongly hooked and acute. Length $\frac{5}{16}$ in.; breadth $\frac{7}{16}$ in.

Bowen; found by Mr. Alex. Morton in the siphons of an *Aspergillum*.

21. Calcinus terræ-reginæ, *sp. n.*

Surface of carapace and limbs ornamented with scattered punctations. Eyes slender, longer than the front of the carapace; basal scale slender. Left chelipede somewhat swollen, smooth; hand with a row of small granules below; fingers widely gaping, obscurely toothed internally. Right chelipede with the carpus and hand compressed, slightly granulate externally, and with a few scattered hairs; hand strongly cristate above, the crest divided into five strong teeth; mobile finger with three or four small teeth above. Carpus of the second and third legs with a minute acute spine at the distal end of its upper border. Ambulatory legs with a few scattered fasciculi of hairs. In specimens preserved in spirits the chelipedes (with the exception of the fingers and the carpus of the ambulatory legs) are green; the fingers are colourless; the propodos of the ambulatory legs is light dull red; the basal portion of the dactylus dark purple, the distal portion light yellow with a black tip. The rest of the surface is washed with light brown and olive. Length about one inch.

Claremont Islands, Queensland Coast, on coral reef.

22. Galathea corallicola, *sp. n.*

Nearly allied to *G. australiensis*; distinguished from it by the absence of the spines on the gastric region, by having the frontal region rather narrow, the eyes longer, and the hands both longer and broader and with very few spines. In some specimens the hands are broader than in others, and the fingers gape widely. Length about ½ in.

Port Molle, Queensland, under blocks of dead coral between tide marks.

23. Galathea magnifica, *sp. n.*

Carapace and rostrum nearly as in *G. corallicola*, but the latter relatively shorter. Eyes more prominent than in *G. corallicola*, but not so thick. Chelipedes very small, about ⅔rds of the length of the body, slender; fingers not gaping. Length ½ in. Colour bright red, with a brilliant purple stripe down the centre of the carapace; legs ornamented with transverse bands of darker red and purple; fingers dark reddish brown, yellow at the tips.

A number of specimens of this remarkable species were obtained with the dredge in a depth of about twenty-five fathoms, off Broughton Islands, near Port Stephens.

24. Galathea aculeata, *sp. n.*

Allied to *G. corallicola* in the form of the carapace and rostrum, but with the central spine of the latter very long, projecting far beyond the others. Chelipedes longer than the body, with few spines, the propodos short and narrow, the fingers not gaping. Length ½ in.

Holborn Island, twenty fathoms; Port Molle, fourteen fathoms.

25. Galathea deflexifrons, *sp. n.*

Closely allied to *G. elegans*, distinguished from it only by having the rostrum distinctly deflexed, and the denticle on its borders almost obsolete. Colour dark purple.

Albany Passage, among *Comatulids*.

26. Gebia spinifrons, *sp. n.*

Front divided into three parts by two deep lateral longitudinal grooves, which extend on the upper surface of the carapace, becoming shallower posteriorly and bending slightly outwards; the mesial portion of the front much more prominent than the lateral portions, and forming a triangular rostrum with a narrow mesial longitudinal groove above; lateral portions each with two small acute teeth below near their extremity; cephalic region of the carapace marked with numerous transverse scabrous lines beset with hairs; anterior border, below the lateral frontal process, and behind the base of the antennæ, with three prominent acute spines; two others on the outer portion of the antennary sternum; three smaller close together in a longitudinal row on the hepatic region parallel with and close below the lateral border; and a row of 2-10 others bordering the lateral portions of the cervical groove behind. First three pairs of legs having the merus armed below with a variable number of acute spines; first pair also armed with a row of spines on the upper border of the propodos and carpus, and a single spine on the upper border of the merus near the distal extremity; second pair with a single spine on the upper border of the carpus, and two near the distal end of the upper border of the merus. Length 3 in.

Port Stephens, eight fathoms.

27. Alpheus Comatularum, *sp. n.*

Carapace broad, somewhat depressed. Rostrum very long, one-third of the length of the carapace, slender and acute, continued backwards over a third of the length of the carapace as an acute, prominent, arched crest. A prominent, acute supra-orbital spine more than one-third of the length of the rostrum. External antennæ with two acute spines at its base, the outer very large. Basal spine of internal antennæ long, acute. Propodos of large hand swollen, smooth; immobile finger nearly straight, with a hairy protuberance at the base of its inner border;

mobile finger compressed, slightly hooked at the end, with a large recurved tooth on its trenchant border at the base. Length 1⅛ in. Carapace with longitudinal stripes of brownish purple, with a narrow mesial white line, which is continued on the two first abdominal segments; at the sides three short white markings. Abdomen with broad brownish purple and narrow white lines; bases of antennæ purple; longitudinal stripes of purple on the ambulatory legs. Large hand marked with longitudinal lines of light brown, bordered by narrow darker bands.

Dredged in a few fathoms of water in Albany Passage, near Cape York, Queensland, during the cruise of H.M.S. "Alert," in those waters. They were invariably found clinging to the arms of a species of *Comatulid* to which their markings gave them a general resemblance. Other commensals of these *Comatulids* were *Galathea deflexifrons*, and an undescribed species of *Cymothoid* the latter usually esconcing itself in the stomach of its host, its head projecting out of the mouth.

DESCRIPTION OF A SUPPOSED NEW SPECIES OF RAT FROM THE INTERIOR OF NEW SOUTH WALES.

By E. P. RAMSAY, F.L.S., &c., &c.

MU. *(Hapalotis ?)* TOMPSONI, *sp. nov.*

General colour above, light grey, with a fulvescent tinge, pencilled with black from the forehead to the tail; face grey, whiskers long, black, the lower hairs nearest the angle of the mouth white; ears naked, (under the lens clothed with minute greyish short hairs); down the back and sides the fur is mixed with long black hairs, which gives a rather harsh feeling when touched; from the throat to the belly and inside of the legs and arms to the root of the tail, the fur is softer and quite white; the outer sides of the arms and legs are greyish with a very slight fulvescent tinge, which tint extends also slightly on the cheeks; the basal portion of the fur is slate colour on the back and sides, also on the outer parts of the arms and legs; hands rather small, grey above; the arms white below; hind foot and toes white; tail blackish, scales very conspicuous, the hairs short, flat and black, not in any way hiding the scales.

Total length of body 6·8; length of the head 1·65, width at base of the ears 0·75, width between the eyes 0·3; hand and fingers 0·65; forearm in the flesh 1 inch; hind foot and toes 1·3; tibia and fibula in the flesh 1·5; tail 7·7; from snout to centre of eye 0·8, from snout to base of the ear 1·5; from centre of eye to ear 0·65; length of the ear (fig. 1, *a.* to *b.*) 0·85, greatest width (fig. 1, *c.* to *d.*) 0·5; length of free portion of the upper incisors 0·25, length of free portion of lower incisors 0·4.

This species comes near *Hapalotis arboricola* and *H. murinus*, but is much larger than the latter, and has the tail very much longer, the ears are rounded and apparently naked; it may be distinguished from *H. arboricola* by having the whole of the fur on the under surface silky white, and by being more rufescent above. The ears are proportionately small for a *Hapalotis*, and the naked tail and longer snout give it more of a *Murine* appearence. The teeth cannot be examined without dissecting; hereafter when more specimens are obtained I may have an opportunity of making some notes on its dentition. *Sex* female.

This specimen was one of a colony which had taken up their abode in an old house at Waterview near Wagga, N.S.W., and was forwarded to the Hon. William Macleay, by F. A. Tompson Esq., after whom I have the pleasure of naming it.

I was at first inclined to refer this animal to *Hapalotis murinus*, of Mr. Gould, but on reference to his plate and description in the Mammals of Australia, Vol. III., pl. 7, I find certain differences there, which if correct, will warrant its separation from that species. I regret we have no specimen of Gould's *Hapalotis murinus* to compare with it.

The wood cuts show in—

Fig. 1. The pinna of the Ear.
,, 2. The under surface of the hand.
,, 3. The under surface of the foot.

(Type in the Macleay Museum.)

Fig. 1.

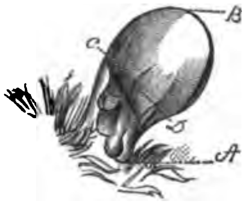


Fig. 2.

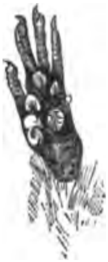
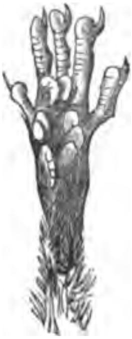


Fig. 3.



PLANTS OF NEW SOUTH WALES—No. V.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

We are now to review the *Monochlamydeæ*, including Sub-class III. and also the *Gymnospermæ*, Sub-class IV., which extend from Vol. V., p. 142, to Vol. VI., p. 255 of the *Flora Australiensis*, thus concluding the grand division of monocotyledonous plants. The species are not so numerous as those of the *Monopetalæ*, but the sub-classes are remarkable as containing plants with only one, or, in the case of the *Gymnospermæ*, without any floral envelope, amongst the former of which many of the *Proteaceæ* are peculiarly Australian. According to the species yet recorded for the three colonies, the following is the result, though there can be but little doubt that the numbers for Queensland will be increased, as the scrubs are more carefully examined.

	Orders.	Genera.	Species.
Queensland ..	21 ..	126 ..	377
New South Wales	19 ..	112 ..	392
Victoria ..	16 ..	61 ..	197

It appears, so far as yet observed, that the *Paronychiaceæ* and *Cupuliferæ* do not extend to Queensland, no do the *Myristiceæ*, *Eleagnaceæ*, *Nepenthaceæ*, and *Balanophoreæ* to New South Wales, whilst Victoria is not only deficient of the last mentioned orders, but also of the *Piperaceæ*, *Aristolochiaceæ* and *Cycadeæ*. The species of *Proteaceæ* attain their maximum in New South Wales, being more than double the number recorded for Queensland or Victoria respectively; but the *Amarantaceæ*, *Monimiaceæ*, *Laurineæ* *Thymeleæ*, *Euphorbiaceæ*, and *Urticeæ* are far more plentiful in Queensland, than in New South Wales or Victoria. One of the most important orders of this division is that of the *Chenopodiaceæ*, so highly prized in many parts of the interior for the plants called "Salt-bushes," including species of *Rhagodia*, *Atriplex*, *Kochia*, &c. The genera are nearly equal in the Eastern colonies but the species are more numerous in New South Wales. In his recent work on the "*Native Plants of Victoria*," Baron F. von Mueller, has described 49 species as indigenous in Victoria, whilst those of New South Wales are supposed to be nearly 70. Of the nine Australian genera of *Amarantaceæ*, 8 are represented in Queensland, 6 in New South Wales, and 4 in Victoria, whilst the species of *Polygonaceæ* are nearly equal in the three colonies. The Nutmeg family is limited to a solitary species in Queensland. Of the *Monimiaceæ*, *Doryphora sassafras* is peculiar to New South Wales; *Atherosperma moschatum* is common to New South Wales, Victoria, and Tasmania; and the species of *Mollinedia* and *Kibara* are for the most part limited to Queensland. Since the publication of Vol. V, of our *Flora*, flowering specimens of *Palmeria* *racemosa* have been found at the Kurrajong, but specimens recently discovered near Bulli by the Rev. T. V. Alkin, M.A., seem to connect that species with the northern *P. scandens.* The only plants of the *Laurineæ* indigenous in Victoria are the leafless and parasitical *Cassythæ*, but the species of the order become more important in the Northern parts of New South Wales and Queensland, where they appear as trees and are known for their timber, as well as for their medicinal properties. There is a true Cinnamon in Northern Queensland *(Cinnamomum Tamala)*,* and according to the recent arrangement, the genus *Tetranthera* is now limited to Queensland, R. Brown's *T. dealbata* being referred to *Litsæa.*

Of the 29 genera of the *Proteaceæ*, 21 occur in Eastern Australia as *Adenanthos*, *Stirlingia*, *Synaphea*, *Franklandia*, *Bellendena*, *Agastachys*, *Cenarrhenes*, and *Dryandra*, are for the most part indigenous in Western Australia and Tasmania. The *Proteaceæ* are known principally in Australia and South Africa, but whilst species occur here and there in New Caledonia, the Oriental Archipelago, Asia, and Japan, *Guevina avellana*, or the Evergreen Hazel-tree of Chili, extends from middle Chili to Chonos Archipelagus (see Baron Mueller's " Select Extra-tropical plants "). This order is one of those which impresses a distinct feature on Australian Vegetation, and includes in its genera humble plants and trees of considerable size, some of which are valued for their timber, edible fruits, and industrial products. It is remarkable that the genus *Dryandra* with its 47 species is endemic in Western Australia, being similar in many respects to *Banksia*, but differing in having the flowers sessile in an involucre of numerous imbricate scale-like bracts. The *Thymeleæ* are represented by about 20 species in the three colonies; but, whilst in Victoria the *Euphorbiaceæ* number 22 species (*"Plants of Victoria*, F.v.M.),

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*By a recent arrangement this plant is now connected with *Pherosphæra*, which some regard as a sub-genus of *Dacrydium*.

and in New South Wales between 60 and 70, those of Queensland are above 100. This order, indeed, is usually more abundant in tropical and semi-tropical countries, and it is found to diminish in numbers in more temperate regions, and very few ascending into alpine or cold climates (Bentham). All the large trees of the *Euphorbiaceæ* (with the exception of *Phyllanthus Ferdinandi* and *Claoxylon australe)* occur principally in the Northern parts of the Colony and in Queensland, amongst which the poisonous *Excœcaria Agallocha* is the most to be dreaded on account of the injury which the juice does to the eyes. A similar remark, in reference to the size and number of the *Urticeæ*, may be made as that already applied to the *Euphorbiaceæ*; for whilst in Victoria four genera are represented respectively by a single species *(Plants of Victoria*, F.v.M.), and New South Wales has scarcely 20 good species, the number in Queensland is nearly 50, including some trees of good size, as well as several gigantic species of *Ficus*. According to Baron Mueller *F. scabra* or *aspera*, extends through Eastern Australia and to Polynesia, whilst the Nettle-tree, in one form or other, occurs occasionally from Illawarra to Rockingham Bay.

The order *Casuarineæ*, which furnishes the trees popularly termed oaks, consists of a single genus, and the species do not exceed 7 in any of the Eastern Colonies, The occurrence of a Beech *(Fagus Moorei)* in New South Wales is remarkable, and, being closely allied to *F. Cunninghami*, it seems to form another link between the Flora of Australia and Tasmania. Of the *Santalaceæ*, the Quandong *(Fusanus acuminatus)* does not extend to Queensland, but the "Native Currant" *(Leptomeria acida)* and the "Native Cherry" *(Exocarpus cupressiformis)* are common to the three colonies. The Conifers of Australia consist of 11 genera and about 26 species, of which 4 only occur in Victoria, and 8 or 9 in New Sonth Wales and Queensland. *Araucaria Cunninghami* and *A. Bidwillii*, *Dammara robusta*, and *Podocarpus elata* are splendid trees, limited for the most part to Queensland

and prized for the value of their timber. *Dacrydium Franklinii* which is a large tree rising from 60 to 100 feet, is peculiar to Tasmania, but Mr. R. D. Fitzgerald, F.L.S. has recently discovered that the genus is represented on the Blue Mountains by a small shrub described by Baron Mueller under the name of *D. Fitzgeraldi (Fragmenta,* Vol. II., p. 102). The discovery of this plant is highly interesting, as it affords an additional link between the Flora of Australia and New Zealand. The *Cycadeæ* of Australia are confined to three genera and seven species, all of which, with the exception of *Macrozamia Fraseri,* are found in Queensland. The order does not extend to Victoria.

Of the introduced plants of the Monochlamydeæ the following have been recorded:

Phytolacca octandra, (Linn.)
Chenopodium murale, (Linn.)
,, *ambrosioides* (Linn.)
Atriplex patula (Linn.)
Amarantus paniculatus, (Linn.)
,, *blitum* (Linn.)
,, *viridis* (Linn.)
Rumex crispus (Linn.)
,, *conglomeratus* (Mur.)
Rumex acetosella (Linn.)
Polygonum aviculare (Linn.)
,, *orientale* (Linn.)
Cuscuta epithymum (Willd.)
Euphorbia peplus (Linn.)
Ricinus communis (Linn.)
Urtica dioica (Linn.)
,, *urens* (Linn.)
Cannabis sativa (Willd.)

In concluding my review of the Dicotyledonous plants of New South Wales, it would appear that the indigenous species are nearly 2,000, whilst those which have been introduced accidentally are about 115. I am well aware that this estimate is far from being correct, and that the progress of cultivation is gradually encroaching on our native vegetation. Baron Mueller, in his admirable volume on "The Native Plants of Victoria," omits any enumeration of introduced plants, because he remarks "not only would it be difficult to affirm, where the annually increasing number of these kind of hospitants or invaders or garden fugitives was to end in any enumeration of the vegetation of our prolific clime, but the arbitrary admission of any of them would also disturb an unimpaired view over the purely native flora." Whilst, however, the Baron has designedly omitted this subject, we may gather from the volumes of the *Flora Australiensis*, (in which in conjunction with Mr. Bentham he has expressed his views in reference to many plants of doubtful origin,) a list of of the principal species unknown at Port Jackson in the early days of the colony. No one is better qualified than the Baron to form a correct opinion of the matter, or to give an approximate estimate of the plants peculiar to the Australian Colonies, for his personal researches in the field have extended over a considerable portion of the continent for thirty-four years. I hope, therefore, that when he has completed his survey of Victorian plants, he will discuss in an elaborate manner the topics which I have been briefly considering in these papers.

POPULAR NOMENCLATURE.

BY THE REV. DR. WOOLLS, D.D., F.L.S.

People sometimes make themselves merry with Botanical names, and no doubt they have some reason for merriment, for, as Professor Lindley remarks, "It is full time, indeed, that some stop should be put to this torrent of savage sounds, when we find such words as *Calucechinus*, *Ovsigenesa*, *Finaustrina*, *Kraschenninikovia*, *Gravenhorstia*, *Andrzejofskya*, &c., thrust into the records of Botany." Now in order to remedy this evil, the popular idea is to adopt short names in the vernacular, and to give up scientific names altogether. This seems very feasible to persons who have not considered the subject, for they forget that the popular names of one district are not those of another, and that unsatisfactory as some scientific names are, they are, nevertheless, necessary, for the world at large. Whilst, therefore, care should be taken to abbreviate and render euphonious the nomenclature of science, it by no means follows that such can be abandoned altogether. English names are very suitable for English-speaking people, but they convey no idea to foreigners, who do not understand the English language. As a vehicle, therefore, for educated persons in all parts of the world, no language can be more suitable than Latin or Greek; whilst it may be admitted that popular names for genera and species, wherever such can be adopted for particular countries or districts, are not without their use. In the old countries of Europe, plants for the most part have common as well as scientific names, and uneducated people find no difficulty in distinguishing such species as are useful for economical or medicinal purposes. This, however, is not the case in Australia, for the early settlers, who imposed popular names on indigenous shrubs and trees, did not exercise much discretion. Hence it often happens that persons who now desire to acquire some knowledge of Australian Plants without referring to scientific works, are led astray by the sound of European terms with which, perhaps, they have been familiar in other countries. In one of our largest and most important genera, this is certainly the case. Many species of Eucalypts are called "Gum-trees"; but, surely,, if any native trees deserve the name, it should be those species of *Acacia* which produce the substance similar to that called Gum-arabic, and not those, which the Pharmacopœia recognises for the excellency of their kino. Whilst Eucalypts, therefore, are wrongly named "Gum-trees," some species of *Acacia*, which really are such, have now acquired the appellation of Wattles. In the early days of the colony, as Don states, *Callicoma serratifolia*, was the Black Wattle, being probably so called, because it abounded where Sydney now stands and was used in the construction of rude buildings, but now the terms Black and Green Wattle are applied almost universally to the two varieties of *Acacia decurrens*, which, in many respects, resemble each other, but flower at different seasons. Then, again there are our "Apple trees *(Angophora)*, so called, one would think, because they do not resemble the European Apple either in foliage or fruit! Nor are the terms "Gum-trees" and "Apple-trees" less approprinte than such as "Honey-suckle," "Native Tulip," "Native Rose," "Native Hops," "Native Tobacco," "Native Cherry," "Native Peach," "Native Orange" &c. which are applied to *Banksia*, *Telopea*, *Boronia*, *Dodonæa*, *Humea*, *Exocarpus*, *Owenia*, *Capparis* &c. Seeing, then, that such names are calculated to mislead, what is to be done in the way of nomenclature? Are we to assist in perpetuating an erroneous method of distinguishing species? Or should we strive by the abbreviation of scientific names, or the use of native names whenever practicable, to render the study of native plants easy to the uninitiated? As a general rule, I believe, it would be advantageous to discourage, as far as possible, the use of popular terms. Many of them are without meaning, and many are calculated to convey a wrong impression. Thus for instance the terms "Honey-suckle" and "Tulip" are applied to species of the Proteaceæ; "Gum-trees" and "Apple-trees" to those of the Myrtaceæ; "Rose," "Hops," and "Tobacco" to the Rutaceæ, Sapindaceæ, and Compositæ; and "Cherry," "Peach," and "Orange" to the Santalaceæ, Meliaceæ, and Capparideæ. It is evident, therefore, that such names are mischievous, so far as the pursuit of Botany is concerned, for they teach persons to associate species with families with which they have no relation. Baron F. von Mueller, who has paid more attention to the study of our Eucalypts than any one in these Colonies, is of opinion that all the popular names should be set aside, for it has been found that the Red Gum of one district is an *Angophora*, and of another an Eucalypt, whilst the names Blue, White, Grey, and Spotted Gums are applied indifferently to several species. Mr. Bentham in describing from dried specimens forwarded to him from Australia, was often perplexed by local names, and although he laid down a system of classification which is being successfully followed by Baron Mueller, he seemed almost to despair of reconciling it with the notes of collectors. Within the last few years, the study of native plants has become more popular than it was, and it is to be hoped, that, as the subject is more generally pursued, many of Robert Brown's names, which are singularly appropriate, will come into use amongst educated people. That eminent Botanist was the first to give "a local habitation and a name" to the principal genera about Port Jackson, and whilst some names bring to the mind at once some peculiar character in the structure of plants there are others which are associated with naval, military, or scientific heroes ever to be remembered in the history of Australia. In conclusion I would remark, that, whilst I feel but little sympathy with such terms as those stigmatized by Lindley I feel still less with those which ignorance or folly has imposed. The one, indeed, may be modified and improved, so as to convey some definite meaning, but the other should be gradually discontinued as leading to misconception.

AUSTRALIAN OCTOPODIDÆ.

By James C. Cox, M.D., F.L.S., &c.

In presenting for your consideration the following remarks, accompanied by a carefully compiled list of the species, and ample references to authors, of all the known animals which inhabit our coasts, of the Family Octopodidæ, I am actuated by the desire of directing, through the medium of our Society's Transactions, the greater attention of our resident naturalists to the study of this particular, although limited, branch of the naked cephalopods.

The Octopods are unquestionably the most highly organized and the most remarkable of all the animals which constitute the great molluscan group: but from the many difficulties attendant on their capture, and after death in their preservation, they have been the most neglected by collectors, and consequently are but very imperfectly known in regard to the number of genera and species, and to those variations caused by growth.

The vast extent of the Australian coast, combined with its genial temperature, should, it is to be presumed, prove prolific in producing many new and distinct forms of this peculiar family; hitherto but a few species have been determined, and even of these the descriptions are scattered either among those costly works which are occasionally issued at the expense of Governments or cf Societies, or are to be found distributed in the several records of the collections made during the passing visits to our shores of scientific Voyagers.

Our Public Institutions are but ill supplied with works illustrative of natural history, and, besides, they cannot afford that ready access for reference, so continually required for the accurate examination of the specimens.

Our amateur naturalists, to whom we already owe so much for developing many portions of the fauna of our lands and seas, are consequently thus placed under great difficulties in carrying out critical investigations on a group so little known and so disregarded as the Australian Octopods.

To supply this want, I give annexed a carefully compiled statement and descriptions, extracted from standard works, of all the species of those Octopods said to inhabit the Australian coasts, and likewise of those found on the shores of adjacent lands. To this enumeration will be added references to the plates which contain illustrations of these animals, and, more especially, will be furnished a condensed list of the principal synonyms, in order to afford a ready means for the adoption of the correct name of each individual according to recent nomenclature.

Should the subject of this paper be deemed of sufficient importance to be admitted in our publication, my object in writing would be thus brought prominently before the readers of the Society's Journal, and, then, by being freely distributed to those persons residing along our coasts, and interested in such pursuits, the compendium would supply the required essential information as to the known genera and species. In addition to this, I trust this production will stimulate into action naturalists and collectors by the reasonable hope of making new discoveries; and by the laudable desire of confirming, or otherwise, by observation of the living animal, the accuracy of preceding researches. I firmly believe that some of the species are wrongly described, as has been shown by Professor Owen in the Transactions of the Zoological Society of London, June 1881, in the case of one of our common Octopods; while others said to be different, are but one and the same; so altered do the specimens become in size and in the entire loss of colour, by even a very short immersion in spirits.

It is very necessary therefore, that careful notes should be made immediately after the capture of the animal in relation to its external appearances, its size, its colour, and in short, to all other features deemed of importance to the observer: also, if practicable, a coloured drawing, even if rough, taken before any detrimental change occurs, would be of the greatest advantage for characteristic determination.

My friend the Hon. William Macleay possesses in his extensive and admirable Museum many specimens of Octopodidæ collected by him at various widely apart localities, stretching, I may say, from this port to New Guinea, during his voyage in the Chevert: a voyage undertaken solely for the developement of the natural history of this region. These most interesting specimens will have to be made the subject of a future communication.

There is at present in the course of publication an admirable and voluminous Manual of Conchology profusely illustrated by excellent coloured plates by Mr. George W. Tryon, Jun., Convervator of the Conchological section of the Academy of Natural Science of Philadelphia, U.S., of which the first volume, recently received, is wholly devoted to the consideration of all the known genera and species of the class Cephalopoda. To this carefully compiled monograph, the best indeed extant, I am greatly indebted for information which I could not otherwise have acquired regarding the Australian Octopods, and so impressed am I with the value of this manual, that I would strongly recommend our Public Institutions, and our professional and amateur Conchologists to possess themselves with copies for the classification of the Mollusca in their cabinets.

In this treatise on the Cephalopods, Mr. Tryon follows, in part the synopsis, and system of arrangement of the species as originally proposed by the late Dr. J. E. Gray of the British Museum, and I shall imitate his example in the present paper.

Early in 1849 Dr. Gray published on behalf of the Trustees his Synoptical Catalogue of the Cephalopoda and proposed a systematic arrangement of the species, paying great attention to the descriptions, measurements, and habitats of each. This Synopsis, although far from being perfect, is still the one usually followed, but its value as a guide is greatly depreciated by the absence of illustrations and by many of the descriptions being taken from animals preserved in spirits, rendering the recognition of species almost impossible. Dr. Gray in the prefatory remarks, states that the Monograph of the Cephalopoda by M. D'Orbigny and Baron Férussac has been of great use to him during the compilation of the Catalogue.

The splendid monograph mentioned by Dr. Gray, was published in Paris during the years 1835 to 1848, under the title, "Histoire Naturelle des Cephalopodes, vivant et Fossiles," and will for ever stand as a monument to record the ability of these labourers in Science. The beautiful illustrations and the carefully executed scientific dissections of the various parts of the animals must always make this work the basis on which dissertations on this class must depend.

In the present paper I intend to confine my observations to the Octopodidæ, and principally to those species found frequenting the coasts of this part of the southern hemisphere, leaving the Decapoda for future consideration.

Class CEPHALOPODA.

Head large, distinct from the body: eyes complex, fixed or moveable: mouth with a pair of mandibles or beaks, acting vertically, like those of a parrot, edged with fleshy lips, and surrounded by a circle of arms. The sexes are always distinct, and in habits all are marine and predatory, existing on shell-fish, crabs, and fishes.

Order 1. *Dibranchiata*, (Owen), Octopods, Argonauts, Cuttle-fish, squids, &c., &c.

Breathing by a single pair of internal symmetrical, plume-like branchiæ, or gills. Animal swimming, naked*: eyes sessile, prominent: mandibles horny: arms eight or ten. provided with rows of acetabula, suckers, or cups: body round or elongated, frequently laterally or posteriorly finned: shell internal, horny or shelly, or none: ink gland always present.

Order 2. *Tetrabranchiata*, (Owen), Nautili, Ammonites, &., &c.

Breathing by two pairs of internal symmetrical, plume-like branchiæ, or gills. Animal creeping, protected by an external shell: eyes pedunculated: mandibles calcareous; arms, or rather tentacles, very numerous, not furnished with acetabula, or suckers: body attacked to the shell: siphon an incomplete tube formed by the union of two lobes: shell external, many chambered, outer layer porcellanous, inner layer and partitions nacreous; body-chamber capacious in which the animal lives; no ink gland.

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*The external shell of the Argonaut is simply the egg-nest of the female.

Order 1. *Dibranchiata.*

Sub-Order 1. *Octopoda.*—Octopods, Argonauts, &c.

Arms eight, sessile: no shell, but in lieu, with cartilaginous styles encysted in the substance of the mantle: eyes fixed, incapable of rotation.

Sub-Order 2. *Decapoda.*—Cuttle-fish, Squids, &c. &c.

Arms ten, of which eight are sessile and two, the longer ones, tentacular: shell, gladius, or pen, internal, horny or calcareous, so loosely suspended, as to fall out, when the bag which contained it is opened: eyes moveable in their orbits: body elongated, always with a pair of fins.

Sub-Order 1. *Octopoda.*

Littoral.

Family I. OCTOPODIDÆ.

Arms elongated, subulate, more or less united at the base by a web: suckers sessile: no cephalic aquiferous pores: shell represented by two short styles, encysted in the substance of the mantle.

Pelagic.

Family II. TREMOCTOPIDÆ.

Suckers pedunculated: aquiferous pores on the back of the head.

Family III. ARGONAUTIDÆ.

The two upper or dorsal arms of the female only expand into velamenta or broad webs at their extremity and secrete a symmetrical involuted shell: cups slightly pedicelled: two aquiferous pores at the upper angle of the eye.

Note.—The descriptions of Family IV. and subsequent ones are for the present deferred, as they relate to the Decapods.

FAMILY I. OCTOPODIDÆ.

Synopsis of Genera.

a. Arms with three rows of suckers.

* Body not finned.

Genus TRITAXEOPUS, Owen, T.L.S., London, pt. 5, Vol. xi., 1881.

Body oval, rounded: arms long: suckers sessile.

b. Arms with two rows of suckers.

Genus OCTOPUS, Cuvier.

Body oval, rounded. Arms long: suckers sessile. 1st or 3rd right arm of male hectocotylized.

Genus CISTOPUS, Gray.

Similar to *Octopus*, but with a small aquiferous pore upon each web between the arms.

Genus SCÆURGUS, Troschel.

Body oval: arms short: cups with narrowed bases: third left arm hectocotylized.

** Body finned.

Genus PINNOCTOPUS, D'Orbigny.

Body orbicular: arms long.

c. Arms with a single row of suckers.

* Not finned.

Genus ELEDONE, Leach.

Body rounded; third right arm hectocotylized.

Genus BOLITÆNA, Steenstrup.

More gelatinous than *Eledone*: suckers smaller, less developed.

** Finned.

Genus Cirroteuthis, Eschricht.

Body with two transverse medial fins: arms united by a web nearly to their tips.

Family II. TREMOCTOPIDÆ.

Genus Tremoctopus, Chiaje.

Body rounded: two aquiferous pores in the neck: third right arm hectocotylized, fringed on the sides, and developed in a sack-like aperture on the side of the head.

Genus Parasira, Steenstrup.

Body rounded: head small; no aquiferous pores: third right arm hectocotylized, not fringed, developed from a pedicelled sack. Male very different from the larger female.

Genus Haliphron, Steenstrup.

Arm only known, with bell-shaped cups having lily-like borders.

Family III. ARGONAUTIDÆ.

Genus Argonauta, Linnæus.

Characters those of the family. Third right arm hectocotylized.

Family I. OCTOPODIDÆ.

Genus Tritaxeopus, Owen.

Synopsis of species.

1. The cups of the arms sub-equal, regular.
    A. The lower cups far apart, in one series.
        a. Body smooth, not bearded.
        b. Body smooth, bearded.
        c. Back slightly granular.
        d. Back granular, rough.
    B. The lower cups rather crowded.
        a. Body smooth, not bearded.

b. Body smooth, bearded.

c. Body minutely granular.

d. Body granular, rough.

2. The cups of the dorsal pair of arms largest.

3. The seventh to the twentieth cups of the lateral (second and third) pairs of arms much larger than the rest.

4, Doubtful and apocryphal species.

NOTE.—The dorsal arms are considered the first pair, the laterals the second and third pairs, and the ventrals the fourth pair; they are numbered 1, 2, 3 and 4, respectively.

Cups in triple series.

1. Cups of the arms sub-equal, regular.

A. The lower cups far apart, in a single series.

a. Body smooth, not bearded.

Arms 3, 2, 4, 1.

Tritaxeopus cornutus, Owen, T.Z.S., London, Part 5, Vol. xi., p. 131, pl. 23.

Body oval, warty, " beset with scattered wart-like prominences chiefly on the dorsal aspect: and, of these, four or five of the largest affect a longitudinal disposition. The length of the third arm of the specimen, (a female) figured, is one foot eleven inches, that of the first being one foot two inches; the second arm is but a little longer than the fourth; the whole graduating in the special manner seen in *Octopus vulgaris*, of Lamarck (*O. octopodia* of Linnæus). The webs uniting the arms from the base to the middle of the free margin, is two and a-half inches between the second and third arms, and one and a-half inch between the first and second arms."

"The colour of the *Tritaxeopus* when undisturbed is a dullish pink, reflecting from parts of the "crown" a subviolate tint, but when irritated and alarmed it rapidly assumes tints varying from bluish-red to deep violet."

"This," in respect of the three recognizable series of the cups along more or less of each arm, "however, is the constant character of an Australian species in other respects closely resembling in average size and in the extent of the basal inter-branchial membrane, the common Poulpe (*Octopus vulgaris*) of our own shores."

Habitat Australia—Owen.

Cups in double series.
a. Body smooth, not bearded.
Arms 4, 3, 2, 1.

Octopus mollis, Gould.

Body small, elongate: eyes prominent; siphuncle long, bulbous; arms graceful with thirty or forty remote cupules; umbrella (web) thin, delicate, broad. Length 3 inches.

Hab. Samoan Islands.

"Has the character of a young individual."—Tryon.

Tryon, Man. Conch. Vol. i., p. 112, pl. 31, fig. 34, 35.

b. Body smooth, bearded.
Arms 3, 2, 4, 1.

Octopus octopodia, Linnæus, (*vulgaris*, Lamarck).

Body small, oval, warty, cirrose; dorsal beards placed in a rhomb; head warty; ocular beards three; arms very large, elongate, very unequal in length; web large; cups far apart. Rarely the arms are in order 2, 3, 4, 1. In length, measuring from tip to tip of corresponding arms, most frequently met with from 1 to 3 feet, but Verany states he saw one that measured more than 9 feet, and weighed 35 lbs.

During life the skin of the animal is remarkable for bearing numerous and differently coloured vesicles, which, under the excitement of the moment, produce a rapid change of tint, and a charming play of colours. In deep water, when casually observed, it appears of a brownish purple, while on land or in shallow water it is of a yellowish-green; but when examined more carefully—"French grey, with numerous spots of bright yellow, the former varying in intensity, the latter appearing and disappearing by turns. These changes were effected in such a manner, that clouds, varying in tint between a hyacinth-red and a chestnut brown, were continually passing over the body."—Darwin.

The frequent loss of arms endured by the *Octopus* is compensated by the power in the highest degree it possesses of reproducing mutilated members.

Hab. African, European and American Coasts of the Atlantic Ocean; Mediterranean and Red Sea, Indian and Pacific Oceans.

Sepia octopodia, Linnæus, Syst. Nat., Tom i., Pars ii., 1767.

Octopus vulgaris, Lamarck, Mem. de la Soc. d'Hist. Nat. de Paris 1799, and Hist. Nat. des An. sans. Vert. Vol. 7, p. 654, 1822. Ferussac and D'Orbigny, Hist. Nat. des Cephalopodes acetabuláferes, 1833 to 1848, p. 26, pls. 2, 3, 3bis, 8, 11, 12, 13, 14, 15, and 29. J. E. Gray, Catalogue of Cephalopoda in the British Museum, 1849, p. 6.

Octopus octopodia, G. W. Tryon, Junr., Manual of Conchology, Philadelphia, 1879, Vol. i., p. 113, pl. 23, figs. 3 and 4; and pl. 24, figs. 5, 6, and 7.

In this harbour (Port Jackson) a large species of Octopod exists in considerable numbers, and so closely resembling the *O. octopodia (vulgaris* of Lamarck) in every feature that I am unable to point out any distinction. It also resembles the drawing in the Transactions of the Zoological Society of the *Tritaxeopus cornutus*, with the exception of the three rows of acetabula. In order, however, to ascertain whether any salient distinctive characteristic exists in the animal under consideration, as its habitat to my knowledge extends to a considerable distance along the shores of the east coast of Australia, and also with the faint hope of finding a specimen of Professor Owen's unique species, I went, a few days ago, for a fresh supply, and which I soon obtained by the capture of six or seven fine individuals. I got these, as on former occasions, by a very simple process, namely that of thrusting my bare arm into a *likely* place under the overlapping ledge of rock. when surely enough the tempting bait was eagerly grasped by those of an Octopod; so that by withdrawing slowly my arm, it gave but little trouble to effect the capture of the clinging creature. Under such experience, I can safely verify the truth of M. Verany's statement, that "the action of the suckers of the poulpe *(Octopus)* upon the skin; the serpentine motion and muscular power of the arms; and its hideous aspect, have caused to be exaggerated the misdeeds of the Cephalopod, which is *stupid* and *incapable* of *harm*."

The following is the description of one of the before mentioned captured animals:

Body granulated, of a livid purple, in length 8 inches, and breadth 4½ inches; head, prominent, in length 1¼ inch, and breadth across the eyes 2¾ inches; arms first pair in length, the left, 1 ft. 7¼ in., the right was mutilated, 7½ in. were only left of the thick portion, and an additional 3 inches of a very thin arm, minutely cupped; second pair 2 ft. 1½ in.; third pair 1 ft. 11 in.; fourth pair 2 ft. 0 in.; so that the formula, in this instance, would be 2, 4, 3, 1, which does not agree with Gray or Tryon, but Mr. Tryon says, "In different individuals of the same species I have found several different series of comparative lengths of the arms, the lower cups either far apart or crowded, the body either smooth, or granulated,"—and, as far as my experience goes, I believe him. Cups, the single series of the first pair are in number three; of second pair three; of third pair four; of fourth pair 8; the remainder are in double series, minute at tips of the arms, and large towards the central portion, the largest being ⅜ inch in diameter. Web between dorsals 3½ inches; first and second pairs 4½ inches; second and third pairs 6¼ in; third and fourth pairs 6½ inc.

This species, although larger, may be the *O. tetricus* of Gould, but I find it very difficult to discern between closely allied species the differences said to exist by the descriptions given or shown by the figures.

c. Body minutely granular.

Arms 2, 3, 4, 1.

Octopus saphenia, Gray, 1849; Tryon, 1879, Man. Conch., p. 120.

Ocular beards none; arms moderate, three upper pairs subequal; web short, granular above.

Described from specimens in alcohol (Brit. Mus.) not figured.

Hab. Pacific Ocean; East Coast of South America.

Arms 2, 4, 3, 1.

Octopus superciliosus, Quoy and Gaimard; Tryon, pl. 27, fig. 18.

Body oval, acuminated behind, slightly granular, long bearded; head very distinct, swollen, smooth in the middle, tuberculate over the eyes; arms elongated, angular, conical, nearly equal; cups far apart, large; beak without lateral wings. White when alive. Total length 100 mill., length of body 16 mill.; length of arms 2, 77 mill.; 4, 76 mill.; 3, 70 mill.; 1, 66 mill.

Hab. Bass' Straits, Australia.

Quoy et Gaimard, Zool. du Voy. de l'Ast., Vol. 2, p. 28, pl. 6, fig. 4, 1832. D'Orbigny et Ferussac, Mon. des Céph., p. 41, pl. 10, fig. 3, and pl. 28, fig. 6. Gray, Cat. of Ceph., p. 12, 1849. Tryon, Man. of Con., p. 121.

Arms 4, 3, 2, 1.

Octopus lunulatus, Quoy and Gaimard, Tryon, p. 121, pl. 26, figs. 15, 17.

Body short with scattered tubercles and about twenty prominent circles with concave centres. Head short, thick, tubercular; arms short, conical, nearly equal, with circles on and between them; cups about fifty; web very short. White, the circles blue, paler in the centre. Length of body 8 mill.; length of arms, 4, 21 mill.; 3, 20 mill.; 2, 11 mill.; 1, 17 mill.

Hab. New Zealand.

Well distinguished from all other species by its remarkable colouration.

d. Body granular, rough.

Octopus tetricus, Gould, Tryon, p. 121, pl. 35, figs. 46, 47.

Body large oblong-ovoid bilobed ventrally; head subquadrate, eyes minute; arms very robust, subquadrate, rather short with eighty to ninety pairs of cupules; umbrella large, the membrane passing up the arms, two-thirds of their length. Surface rough with warty granulations, especially large and prominent on back of head and upper half of umbrella; three cirri over the eyes and apparently one below and three along back of head. Length of body 2·5 in; length of arms 2, 16 in.; 3, 16 in.; 4, 13 in.; 1, 12 in.

Hab. Near Sydney, New South Wales.

Octopus tuberculatus, Blainv., Tryon, p 122, pl. 29, figs. 22-27.

Body short, round, back with four conical, acute, diverging beards; head short, ocular beards two, the hinder elongated; arms short, cups very large, the first three in one line, web rather wide extending up the arms. Violet brown, beneath white· Total length 400 mill.; length of body 80 mill.; length of arms 2, 300 mill.; 3, 270 mill.; 4, 240 mill.; 1, 230 mill.

This species may be considered rather doubtful. Dr. Fisher, Mr. Jeffreys and Verany regard it (notwithstanding its tuberculate surface etc.) as a variety of *O. vulgaris*, whilst D'Orbigny, Gray, Wankauff and Torgioni think it distinct.

Hab. Mediterranean Sea; Atlantic coasts of Europe, Africa; West Indies; Pacific Ocean.

Arms 4, 3, 2, 1.

Octopus polyzenia, Gray, Tryon, p. 122.

Body oblong rounded, short, with a few scattered warts or beards; arms slender; web short; cups large.

Hab. Port Essington, Australia.

A specimen in British Museum. Not figured.

Length of arms not stated.

Octopus Bocsii, Lesueur; Tryon, p. 122.

Body roundish, back with a few regularly placed larger tubercles; eyes with three conical beards; arms elongate, without beards, the upper pair with a very wide dorsal membrane, web moderate.

Hab. Australia.

A very doubtful species. It may be equal to *O. polyzenia*, but probably neither of them are good species.

2. Cups of the dorsal pair of arms largest.

Arms 1, 2, 3, 4.

Octopus Cuvieri, Orb.; Tryon, p. 122, pl. 38, figs. 56; pl. 37, f. 55.

Body oblong, enlarged below, warty above with a medial posterior beard; aperture of moderate size; ocular beards indistinct. Arms very long, slender, unequal, 1 and 2 much the longest. Web broad. Cups elevated, some on the two upper pairs of arms larger. Total length 600 mill.; length of body 40 mill.; length of arms 1, 530 mill.; 2, 460 mill.; 3, 420 mill.; 4, 370 mill.

Hab. Canaries; Mediterranean Sea; Red Sea; Indian and Pacific Oceans.

Arms 2, 3, 4, 1.

Octopus membranaceus, Quoy; Tryon, p. 124, pl. 28, fig. 20, 21; pl. 29, fig. 28; pl. 38, fig. 57.

Body obtuse, acutely granular with a lateral membrane; head large, granular above and below, ocular beards three, elongate; arms moderate, quadrangular; cups large, the fourth or fifth cups of the lateral arms much larger than the rest, web moderate, granular. An oval blackish eye-like spot between the bases of the second and third pairs of arms.

"I have figured a portion of membrane with attached eggs (Pl. 20, fig. 6.) obtained by Mr. D'Orbigny from one of the animals collected by Quoy, also an enlarged view of the same showing the embryos (ibid. fig. 7). I do not think it belongs to this species or genus, however (see ante p. 44). The Museum of the Academy of Natural Sciences of Philadelphia possesses three fine specimens of this species fully double the size of those figured by D'Orbigny and Quoy."—Tryon.

Hab. New Guinea, China, Japan.

Arms 2, 4, 3, 1.

Octopus cyanea, Gray; Tryon, p. 125.

Body ovate above rather granular, beneath smooth; ocular tubercle rugose, superior; arms rather elongate, conical; cups large, the tenth to twentieth pairs larger, equal sized, the lowest especially of the ventral arms, one-rowed; web broad, minutely granular above especially between the upper arms. Described from alcoholic specimens in the British Museum.

Hab. Australia.

4. Doubtful and apocryphal species. Gray.

Octopus cærulescens, Péron.; Tryon, p. 125.

Body short; arms much longer than body, cups ending in a point but not clawed. Blue, varied with very small close purple dots; cups whitish.—Blainville.

Form of the cups, if correct would indicate a different family. —Gray.

Hab. Australia.

Octopus pustulosus, Péron ; Tryon, p. 126.

Body rugose. Arms shorter and thicker than those of *O. variolatus*, and with larger and fewer cups. Brownish-green.

Hab. Australia.

Genus PINNOCTOPUS, Orb.

Pinnoctopus cordiformis, Quoy ; Tryon, p. 128, pl. 40, fig. 64.

Body orbicular, tuberculate, winged ; arms long, nearly equal, lateral ones shortest ; eyes rather prominent. Red brown ; arms with pale blue lunules. Total length 39 in., length of body 8 in.

Hab. New Zealand.

NOTES AND EXHIBITS.

Note on *Limopsis Loringi* found on the Coast of New South Wales ; by J. Brazier, C.M.Z.S., Corr. Acad. Sc. Phil. &c.—*Limopsis Loringi*, Angas, Proc. Zool. Soc., p. 183. pl. xx, fig. 6, 1873. *Hab.* Broughton Isles north of Port Stephens, 35 fathoms sandy mud bottom *(Mr. W. Haswell)*; dredged off the coast of Queensland *(Mr. G. F. Angas)*. This magnificent and rare species I found to day in a lot of dredgings obtained last year by Mr. W. A. Haswell, B.Sc., when on an excursion to the north of Sydney on behalf of the Trustees of the Australian Museum. this specimen has lost a little of the beautiful rose-colour through being put into spirits, the margins have a much finer pale brown epidermis projecting in a fringe nearly all round, than in the specimen described by Mr. Angas.

Mr. Selkirk exhibited some very interesting fossil shells from Harpur's Hill, Hunter River, including casts of *Spirifer glaber*, *Vespertilio*, *Enomphalus*. and a gigantic specimen of *Pachydomus globosus*, also a specimen of fossil leaf from Bega and the tibia of a *Diprotodon* from Mount Wingen.

Mr. Hobson exhibited a beautiful and new species of *Bulimus* from the Solomon Islands.

The Hon. Wm. Macleay exhibited some novel implements lately obtained by Mr. Duncan Anderson from the natives of the Batavia River, Gulf of Carpentaria.

Mr. Brazier exhibited specimens of *Culaxis Layardi* and *Helix Caffra*, a man eating Helix from South Africa, also seven slides of Bryozoa from Naples.

Dr. Cox gave an interesting account of the construction of the hairy balls frequently found on sea beaches and generally believed to be shark's or ray's castings. He traces their origin to the mere action of the tides &c., &c., on the common green sea-weed of our Coasts.

Dr. Cox, also exhibited axes of great size weighing seven or eight pounds, from the Caroline Islands, made from the densest part of the large Tridacna shell.

On behalf of Mr. Gilliat some stone axes and fossils from the Darling River, near Wilcannia, were exhibited, one axe of unusual size and weight, was made from rough Devonian sandstone.

Mr. Selkirk exhibited a very neatly arranged book of dried ferns of New South Wales.

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WEDNESDAY, 30TH NOVEMBER, 1881.

The President J. C. Cox, M.D., F.L.S., &c., in the Chair.

Mr. Augustus Gross and Mr. Baker were introduced as visitors.

MEMBERS ELECTED.

Mr. E. Combes, C.M.G., and Mr. W. A. Brodribb, M.L.A.

DONATIONS.

Southern Science Record for October and November, 1881.
Journal of the Royal Microscopical Society for August, 1881.
Annual Report of the School of Mines, Ballarat.
Annual Report of South Australian Institute.

Reuter's "Ad cognitionem redivivam mundi antiqui," Helsingfors.

PAPERS READ.

TWO NEW SPECIES OF PLANTS FROM NEW SOUTH WALES

BY BARON FERD. VON MUELLER, K.C.M.G., PH. & M.D., F.R.S.

JACKSONIA STACKHOUSII.

Dwarf, procumbent or ascendant, not pungent; branchlets very thin, finely or scantily silky, gradually glabrescent, slightly furrowed; flowers dispersed or in pairs along the upper part of the branchlets; calyces silvery-silky, little longer than broad, very angular from the prominent edges of the lobes; upper lip of the calyx divided only to one-third of its length into two deltoid teeth; lower lip slit to the base into three ovate-lanceolar segments; tube suddenly narrow, three times shorter than the segments; petals equally yellow, all of about the same length; ovary sessile; pod shorter than the calyx, almost ovate, compressed silky outside, nearly smooth inside; seeds 1 or 2, grey, minutely blackish-dotted.

This hitherto undescribed *Jacksonia* is in habit and ramification similar to *J. angulata;* but the calyces of the latter are more distinctly stalked and have their five segments equally long, linear-lanceolar, more pointed and slightly downy inside, the corolla is more evidently surpassed in length by the calyx, the lower petals being the shortest and dark purple. The ripe fruit may also prove to be different. In the characteristic of the upper lip of the calyx not being deeply divided *J. Stackhousii* approaches, among the 33 congeners now known, only *J. odontoclada* and *J. ramosissima*.

Several instances are known of very remarkable repetitions of West-Australian forms of plants occurring in the most eastern regions of Australia, though no similar species have been discovered in the wide interjacent spaces, the imitative species being however not identical. Even quite recently the genera *Boronia*, *Agonis*, *Brachyloma* and now also *Myoporum*, have furnished such examples. To these instances another has now been added by Captain Stackhouse, R.N., who sends from near the entrance of the Clarence River the above characterised *Jacksonia*, which he rightly recognized as nearest to the West-Australian *J. angulata*. The same plant had been collected some years ago by Mr. C. Moore and Mr. W. Carron on sand ridges near Cape Byron, and lately the Rev. B. Scortechini has found it also within Queensland boundaries.

MYOPORUM BATEÆ *(Sect. Disoon.)*

Shrubby, erect, glabrous; leaves scattered, elongated, narrow-lanceolar, of thinly chartaceous consistence, minutely serrulated, decurrent into a very short stalk; flowers from 4 to 10 in each cluster, somewhat or considerably longer than their thin stalklets; segments of the calyx narrow-lanceolar, nearly three times shorter than the corolla; the lobes of the latter semiovate-orbicular, glabrous, about as long as the tube; throat of the corolla very scantily short-downy; filaments about as long as the corolla, but much longer than the anthers, smooth; ovary strongly compressed, constantly two-celled, with one ovule in each cell; fruit very small, scarcely half exserted, obcordate or truncate-roundish, rather prominently two-edged, two-seeded; pericarp very thin, not succulent.

On rivulets near Mount Dromedary; Miss Mary Bate.

A shrub, attaining a height of about 5 feet, branchlets smooth, slightly viscid. Leaves flat, when well developed 3 to 4 inches long, ⅓ to ½ inch broad, copiously and almost transparently dotted; gradually attenuated into the narrow acute summit. Stalklets of flowers 1½ to 3 lines long. Segments of calyx hardly exceeding the length of 1 line. Corolla outside more or less rosy-purplish; its lobes measuring scarcely ⅓ inch, the tube about as long. Stamens four. Style setaceous, glabrous, rather above 1 line long. Fruit measuring hardly more than ⅓ inch, somewhat turgid, very compressed at the margin. Seeds oblong-ellipsoid, pendent from the roof of the cell.

This handsome and evidently rare species is in foliage very much like the genuine West-Australian *M. serratum*, but in fruit very different, and comes thus far near *M. floribundum;* indeed it belongs to the series, which on carpologic characteristics was generically separated by Alphonse de Candolle as Disoon, of which subgenus only *M. platycarpum* and *M. floribundum* are known from Eastern Australia, both very different in foliage from the new congener now recorded. Irrespective of the difference of the very narrow leaves, *M. floribundum* has rather acute lobes of the corolla, the tube of which surpasses considerably the length of the calyx, and the fruit is nearly twice as long as broad.

M. platycarpum becomes a small tree, and is restricted to the desert regions of South-Eastern Australia; its leaves are smaller and more rigid than those of *M. Bateæ*, their serratures are more distant and they occur only towards the upper end of the leaves, the calyx has the shortness of that of *M. floribundum*, the corolla is more bearded, the fruit flatter and longer, thus stretching much beyond the calyx, besides being attenuated into an acute apex and marked upwards along the middle of each side by a prominent line. The true *M. serratum* differs from Miss Bate's plant in often shorter leaves, rather longer pedicels, longer and differently shaped segments of the calyx, more bearded corollas with longer lobes, an often downy style and especially in 3-or 4-celled and all round turgid fruits with a thicker endocarp. In reality *M. serratum* is very closely allied to *M. oppositifolium*, but not to the arborescent *M. insulare*, with which Bentham combined it, and which as well as *M. tenuifolium* occurs also near Mount Dromedary, but in subsaline litoral regions.

The botanical collections of the lady who discovered this *Myoporum* contain furthermore several plants especially worthy of record as not having been found formerly so far south (Lat. 36° 20′); these, with others obtained additionally from Mr. Reader,—since notes on his plants were published in the last year's volume of the Linnean Society of New South Wales, pp. 287-218—are comprised in the following list:

Clematis glycinoides, Candolle.
Hibbertia volubilis, Andrews.
Doryphora Sassafras, Endlicher.
**Cryptocarya glaucescens*, Brown.
Vitis Baudiniana, F.v.M.
**Synoum glandulosum*, A. de Jussieu.
Phyllanthus Gasstroemii, J. Mueller.
Muehlenbeckia gracillima, Meissner.
Alphitonia excelsa, Reissek.
Acacia falcata, Willdenow.
Eucalyptus robusta, Smith.
**Apium leptophyllum*, F.v.M.
Xanthosia Atkinsoniæ, F.v.M.
Aster dentatus, Andrews.
Crepis japonica, Bentham.

Solanum violaceum, Brown.
**Myoporum tenuifolium*, G. Forster.
**Myoporum Bateæ*, F.v.M.
Ipomœa palmata, Forskael.
Lyonsia reticulata, F.v.M.
Cymbidium suave, Brown.
Sarcochilus falcatus, Brown.
**Sarcochilus olivaceus*, Lindley.
**Sarcochilus tridentatus*, G. Reichenbach.
Rhynchospora diandra, Sprengel.
Lindsaya microphylla, Swartz.
Lysimachia japonica, Thunb.
Dendrobium æmulum, R. Br.
Bulbophyllum exiguum, Müell.
Viscum articulatum, Burman.

Of these *Eucalyptus robusta*, has been noted still further south (at Merimbula) and *Rhynchospora diandra* as extending to the Genoa.

Further we have now become aware, that the following plants, mostly of Tasmanian type, advance into New South Wales, at least to the vicinity of Mount Dromedary:

Correa Lawrenciana, Hooker.
Muehlenbeckia appressa, Meissner.
**Australina pusilla*, Gaudichaud.
Epacris impressa, Labillardière.
Mentha gracilis, Brown.
Casuarina quadrivalvis, Labillardière.
Hierochloe rariflora, J. Hooker.

The plants gathered solely by Miss Bate, are marked with an asterisk.

What renders these data particularly interesting is the fact of their demonstrating how very far southward some tropical forms of plants extend through the mild litoral tracts of East-Australia, as shown for instance by the occurrence of several epiphytal Orchids; whereas even in equal isothermal zones none are represented by equivalent exponents in the whole flora of Europe anywhere.

ON THE EXISTENCE AFTER PARTURITION OF A DIRECT COMMUNICATION BETWEEN THE MEDIAN VAGINAL CUL-DE-SAC SO-CALLED, AND THE UROGENITAL CANAL, IN CERTAIN SPECIES OF KANGAROOS.

BY J. J. FLETCHER, M.A. (SYD.), B.SC. (LOND.).

I. Introductory.

"In the Marsupialia the female organs consist of two ovaries, two oviducts or fallopian tubes, two uteri, two vaginæ, an urogenital canal, and a clitoris" (Owen). While the presence of two vaginæ is constant throughout the group, there is considerable variation in the relation of the two vaginæ to one another. Thus, again quoting from Vol. III. of Prof. Owen's Comparative Anatomy, "in *Didelphis dorsigera*, each vaginal tube after embracing the os tincæ is immediately continued upwards and outwards, then bends downward and inward, and after a second bend upward, descends by the side of the opposite tube to terminate parallel with the urethra, in the common or urogenital passage. In *Petaurus* the vaginæ * * * descend close together half-way toward the urogenital passage, and there terminate blindly without intercommunication. From the upper part of these culs-de-sac the vaginæ are continued upward and outward, forming a curve, like the handles of a vase, then descend, converge, and terminate close together as in the preceding example. In *Dasyurus vivverinus*, and *Didelphis virginiana* the mesial culs-de-sac of the vaginæ descend to the urogenital passage, and are connected to it, but do not communicate with it or with one another. In the

Wombat *(Phascolomys)* each uterus communicates with a separate and large vaginal cul-de-sac."

In the kangaroos with which we are now more immediately concerned the two vaginæ give rise to but one so-called mesial cul-de-sac, which however shows a more or less complete longitudinal septum. In *Macropus major* Prof. Owen describes the following condition: "the vaginæ preponderate in size greatly over the uteri; and the septum of the descending cul-de-sac being always more or less incomplete, a single cavity is thus formed, into which both uteri open; but however imperfect the septum may be, it always intervenes and preserves its original relations to the uterine orifices. In the specimen examined by me, this part of the vagina was not continuous by means of its proper tissue with the urogenital canal, but was connected thereto by areolar tissue. In *Halmaturus Bennettii*, I found an aperture of communication between the median cul-de-sac and the urogenital canal; and as the same structure has been observed in two other specimens, it is doubtless normal, at least after parturition. The fact however does not justify the conclusion that the lateral vaginal canals convey exclusively the semen for impregnation, and that the median canals, which as a rule, are closed and distinct from one another, serve only to transmit the fœtus to the urogenital passage."

Referring to the reproductive organs of Marsupialia, the English translation of Prof. Gegenbaur's Manual (p. 616) states as follows; "each of the two uteri opens by a papilliform process into a portion, which from the exterior appears to be common to both, and which is formed by the union of the two Mullerian ducts. A curved vagina is given off from this on either side (*Didelphys*), or the commencement of the tube is replaced by a cæcal vaginal sac which is pushed out backwards, and is usually, though not always, divided internally by a median partition; from this sac the distinct vaginal canals pass in a curved direction to the urogenital sinus, *(Halmaturus)*."

The cæcal conditions of the median vaginal sac described by Prof. Owen in *M. major*, and by Prof. Gegenbaur in *Halmaturus* sp. have been shewn by several observers not to obtain in other species of kangaroos, but to be replaced, at any rate after parturition, by the condition met with by Prof. Owen and two other anatomists, in *H. Bennettii*. This interesting condition, beyond the passing allusion of Prof. Owen to its occurrence in one species already quoted, is not mentioned in any of the text books most used by English students, and does not seem to have met with the attention it deserves. Before giving an account of some observations which I have recently had the opportunity of making, the results arrived at by previous observers will be pretty fully stated, since much of the literature relating to Marsupial anatomy in general and to this point in particular, is not accessible in this colony.

II. Historical.

The female organs of the kangaroo were first described by Sir Everard Home in 1795. The following extracts from his paper* bear on the subject, but it must be remembered that when this writer uses the terms, uterus, vagina, and lateral canals, he refers to what are now regarded as being mesial cul-de-sac, urogenital passage and lateral vaginal canals, respectively. Home says: "the vagina itself is about 1½ in. in length, beyond which it is divided into two separate canals, and on the ridge which lies between them opens the meatus urinarius leading to the urinary bladder. * * * * The uterus itself is extremely thin and membranous in its coats, infundibular in its shape and situated in the middle space between these canals; it is largest at its fundus, and becomes smaller and smaller towards the meatus urinarus where it terminates: the uterus at that part in the virgin state being impervious."

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*Phil. Trans., Vol. lxxxv., 1795, pp. 222-230.

Again on p. 228, speaking of the impregnated uterus Sir Everard says "the uterus and two lateral canals have their cavities very much increased in size but that of the uterus is the most enlarged: the communication between these canals and the vagina is completely cut off, by the constricted part close to the vagina being filled with a thick inspissated mucus; and in this state of the parts there is an orifice very distinctly to be seen close to the meatus urinarius, large enough to admit a hog's bristle, leading directly into the uterus where in the virgin state no such passage could be observed."

Finally on p. 229 of his paper Home says that "immediately after parturition, the parts are nearly brought back into their original state, the only circumstance deserving of notice is, that the opening leading directly from the uterus to the vagina, which is not met with in the virgin state, after being enlarged by the passage of the fœtus, forms a projecting orifice and almost wholly conceals the meatus urinarius."

Substiantially the same views are stated in Vol. III., Lect. xii., of the same writer's Lectures on Comparative Anatomy.

Cuvier in his Leçons d'Anat. Comp., says that he found no opening in the mesial cul-de-sac as described by Home. Not having the opportunity of again referring to the Leçons I am unable to give Cuvier's exact words.

In 1828 Seiler published a paper* founded upon the dissection of a female kangaroo and its mammary fœtus. Referring to the point now in question, he says: "One still finds in several recent memoirs, the old opinion repeated, that at the time of the first delivery of the fœtus an aperture in the neck of the uterus originates immediately behind the opening of the urethra, through which the embryo is born. This view seemed so improbable to me, notwithstanding Home's observations in favour of it, that I not only examined the uterus very carefully, but also so thoroughly injected it with mercury from one of the Fallopian tubes, that it was put completely on the stretch, yet no trace of an opening was to be seen, and it is to me not at all doubtful that the embryo is born through the lateral canals of the uterus."

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* Isis von Oken, Vol. xii., 1828, pp. 475-477.

Carus* in 1824 had the opportunity of dissecting a female kangaroo with a mammary fœtus. He found that a communication existed between the mesial vaginal sac and the urogenital passage, and though its aperture was glued-up there was no considerable resistance offered to the passage of a probe. It would also appear that, in the main, Carus accepted Home's views. In this, as in the two previous cases, the animals are merely spoken of as "kangaroos" without being referred to any genera.

In 1834 Prof. Owen† published his paper "On the generation of the Marsupial animals with a description of the impregnated uterus of the Kangaroo," in which he states as follows:—"The fœtus has been conjectured to pass into the urethro-sexual cavity by a direct aperture formed after impregnation at the lower blind end of the cul-de-sac, but I have not been able to discover any trace of such a foramen in two kangaroos which had borne young; and besides, I find that this part of the vagina is not continuous by means of its proper tissue with the urethro-sexual passage, but is connected to it by cellular membrane only; and this structure is agreeable to what is presented in the simpler forms of the marsupial uterus, as in *D. dorsigera* and the *Petauri*, in which the culs-de-sac do not even come into contact with the urethro-sexual passage." The same statement is repeated in the same author's article Marsupialia in Todd's Cyclopædia Vol. III. (1841) and the following reference to Home's paper is made on p. 319. "I have already shewn that one of the chief grounds of the theory of marsupial generation there proposed is untenable, the supposed remains of the fœtus, described as being situated in the corpus uteri, (vaginal cul-de-sac) being nothing more than a portion of the inspissated secretion commonly present both in this sac and the lateral canals. The temporary orifice by which the fœtus is stated to pass immediately from the so-called corpus uteri into the vagina (urogenital passage) does not exist."

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*Lehrbuch der vergl. Zootomie.

†Phil. Trans., Vol. cxxiv., 1834, pp. 333-364.

In the same distinguished observer's * notes (1834) on the dissection of a female specimen of *Macropus Parryii* it is stated that "the mesial cul-de-sac of the vagina did not extend quite so far down in *M. Parryii*, as it does in the better-known species."

Professor Poelman † of Ghent, published in 1851, an account of his dissection of the female organs of *Halmaturus Bennettii*, in which he states that the median vaginal canal communicated freely with the urogenital sinus.

In 1852 Prof. Owen ‡ examined a female *Dendrolagus inustus*, of which he says, "the lateral bent vaginal canals are shorter in proportion than in the *M. major*: but the median cul-de-sac was closed, as in that species." In the same paper the following statement is made. "In a specimen of the *M. Bennettii*, which I dissected in 1845, I detected a natural aperture of communication between the median cul-de-sac and the urogenital canal. I had the pleasure of showing the specimen to Dr. Poelman,* * * and of thus confirming the observation which he had, independently, made of a similar modification of the female generative organs in a specimen of the *Macropus Bennettii*, dissected by him at the University of Gand."

In 1857 Vrolik § published a monograph on the anatomy of *Drendrolagus inustus*, in which, speaking of the median cul-de-sac he says that it was a blind sac without any trace of the opening which Poelman and Owen had met with in *Halmaturus Bennettii*, and which he himself had met with in *H. Billiardieri*.

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* P.Z.S., Pt. ii., 1834, pp. 151-152.

† Bull. de l'Acad. des Sci. de Belgique, Tome xviii., 1851, Pts. I. and II.

‡ P.Z.S., Pt. xx., 1852, p. 106.

§ Ontleedkundige Nasporingen omtrennt D. inustus. Amsterdam 1857.

In 1866 Alix * met with the open condition in a specimen of *H. Bennettii*, and seemingly unaware of the papers mentioned above, published this discovery as a new one. To this both Owen† and Poelman‡ replied pointing out the facts of the matter. From their replies the following extracts are made: " Dans le Macropus, les culs-de-sac vaginaux communiquent entre eux, et la cavité commune s'étend jusqu'au vestibule urétro-genital, mais sans y déboucher. C'est ce que j'ai constaté chez des femelles de l'espèce M. major, qui avaient fait des petits au moins deux fois. Dans l'Halmaturus le cul-de-sac non seulement atteint le fond du vestibule urétro-genital, mais il y débouche, comme on l'a montré depuis longtemps."—(Owen), and " J'ajouterai que, depuis la publication de ce travail (that is Poelman's paper supra), j'ai eu l'occasion de vérifier cette disposition anatomique (that is the open condition) chez d'autres individus appartenant à la même espèce, et en ce moment je ne conserve plus aucun doute sur son existence constante."—(Poelman).

In 1867 Prof Lucä§ published an account of his investigations made upon three females, two of which belonged to *H. Bennettii* and the third to *H. Billiardieri*. The latter and one of the former were adult, and in each case a direct communication existed between the median vaginal cul-de-sac and the urogenital passage. In the third example, which was a not full grown specimen of *H. Bennettii*, Lucä found no trace of an opening either in the mucous membrane of the vaginal cul-de-sac, or in that of the urogenital passage, and that the two mucous membranes were separated from one another by a layer of connective tissue ⅛ mm. thick.

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* Paris, Acad. Sci. Compt. Ren. lxii., 1866, pp. 146-141 and Ann. Mag. Na. Hist. 1866.

† Paris, Acad. Sci. Compt. Rend., lxii., 1869.

‡ Paris, Acad. Sci. Compt. Rend. lxii., 1866, pp. 399-400.

§ Der Zoologishe Garten, Frankfürt, Vol. viii., 1867.

In 1868 the same observer * examined a second adult *H. Bennettii*, which had a mammary fœtus from 2-2½ in. long in the pouch. In this specimen also the median vaginal canal directly communicated with the urogenital canal.

The third volume of Prof. Owen's Comp. Anatomy was published in 1868, but beyond the reference to *H. Bennettii* already quoted, it does not further allude to the subject now in review.

Prof. Pagenstecher † of Heidelberg in 1871 examined the organs of a pregnant female *Macropus major* in which he found the median vaginal cul-de-sac closed.

The late Prof. Garrod ‡ writing in 1875, of *Dorcopsis luctuosa* says: the "uterus is perfectly macropine, as are the vaginæ. No direct communication could be found between the uterine pouch of the vagina and the common vaginal canal."

In 1879, Alix § published a preliminary account of his researches upon the female organs of certain kangaroos. He says that with regard to *Halmaturus*, he has had the opportunity of several times verifying his previous observation. He also says that in a specimen of *M. major* he met with the closed condition as described by Cuvier and Owen. Further in two specimens of *Macropus rufus*, which were mother and daughter, the latter being one-third the size of the former, the same observer found that the direct communication was present in the one and absent in the other. Finally Alix says he has found the direct communication in a Wombat.

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*Der Zoologishe Garten, Frankfürt, Vol. ix., 1869.

†Ann. Mag. Nat. Hist., 1871, pp. 292-294.

‡P.Z.S., 1875.

§Bull. Soc. Zool. de France, 1879, p. 118.

In 1880 Arnold Brass * published a thesis in which he figures and describes the female organ of *M. major* and *Halmaturus Bennettii.* His results entirely agree with those of Prof. Owen in reference to individuals of the same two species. He also speaks of a third specimen which was given to him as belonging to *H. Bennettii*, but though the ovaries shewed two corpora lutea, no direct communication existed between the median vaginal cul-de-sac and the urogenital passage, This paper does not contain much that is new relating to the point now under consideration, since the results recorded merely corroborate those arrived at by several previous observers, and, with the exception of Prof. Owen's article "Marsupialia" from Todd's Cyclopædia, and Prof. Lucä's paper, the writer seems to have been quite unaware of the literature of the subject.

Last summer during the visit of Mr. Forbes to Brazil, my friend Mr. J. J. Lister, B.A. of St, John's College Camb., performed the duties of Prosector at the Zoological Society's Gardens, London. Early in the summer a kangaroo *(H. ualabatus)* in the Collection died, which Mr. Lister dissected. In working over the female organs a direct communication between the median vaginal canal and the urogenital passage was found to exist. Two days afterwards my friend shewed me his careful notes and drawings, and not being able to gather any information relating to this species from the text-books and other authorities then at our disposal they were set aside for further consideration. Subsequently two other kangaroos in the Gardens died, and each of these also possessed a direct communication between the median vaginal canal and the urogenital passage, Now one of these kangaroos was a specimen of *M. rufus*, and as in the case of *H. ualabatus*, we could find no reference whatever to the condition of things in this species. The other animal was a specimen of *M. major*. In the meantime one of us had been investigating literature at the British Museum Library, and finding our results to be so interesting we determined to publish them, together with any others that might come to hand. A draft of a joint paper embodying these and some other observations on specimens which Mr. J. W. Clarke, Superintendent of the Cambridge Museum kindly allowed us to make, and on the organs of a specimen of *Drendrolagus sp.* which died in the Zoological Gardens, was written, and on my leaving England in November last was left with Mr. Lister. Owing to pressure of work that paper was still unpublished at the date of my friend's last letter, and as I have not a copy of it with me I cannot give further details concerning it. Mr. Lister however tells me that he has had the opportunity of examining specimens of "*Petrogale sp.* in various stages with quite the macropine arrangement, *i.e.* closed before, and open after, having had young.

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*Beiträge zur kenntniss des Urogenitalsystems der Marsupialen, Leipsig, 1880.

III. Further Observations.

The following account is founded on the examination of the organs of seventeen kangaroos shot by myself or by friends shooting in company with me, and of three kindly given me by my friend Mr. Morley. Acting on a suggestion made to Mr. Lister and myself, by our distinguished master Mr. F. M. Balfour, F.R.S., of Trinity College Cambridge, I have had recourse to section-cutting in some cases, with the most satisfactory results.

The animals from which the above mentioned organs came, are referable to three genera and as many species, viz. *Osphranter robustus*, *Halmaturus ruficollis*, and *Petrogale penicillata*. I am unaware of any published account of the female organs in any one of these three species, except in so far as the descriptions of *H. Bennettii* already given may apply to *H. ruficollis* of which the Tasmanian species is thought by Waterhouse to be merely a local variety. When Mr. Lister and I were looking at the specimens in the Museum of the Royal College of Surgeons, we noticed one which evidently shewed the direct communication, but on referring to the copy of the catalogue in the gallery no entry about it was to be found. On applying to Professor Flower for further information, that gentleman very kindly allowed us to see another copy of the catalogue which contained the following manuscript entry: "2740 D. The female organs of a small species of kangaroo *Macropus penicillatus*, showing a direct communication, through which a bristle is passed, between the common mesial cul-de-sac and the urogenital passage. In Museum before 1861."

In his article "Marsupialia" *(loc. cit.)* Professor Owen speaks of having received the impregnated uterus of an animal belonging to this species, but beyond the mere mention of it there, no further description is given.

Of my twenty specimens, twelve belonged to females with young in the pouch, four to females with large but empty pouches, and the remaining four to immature animals with rudimentary pouches and teats. Each of sixteen of them shews a direct communication between the mesial vaginal canal and the urogenital passage. In the remaining four the direct communication does not exist, though the condition of things is quite different from that in *M. major*, inasmuch as the tissue of the mesial cul-de-sac is continuous with that of the urogenital passage.

I shall now proceed to describe some of the specimens individually.

Osphranter robustus.—I have examined four specimens belonging to this species of which (*b.*) and (*d.*) were given me by Mr. Morley,

(*a.*) The organs belonged to a nearly full-grown female. There was no young one in the pouch which was large and appeared to have been recently tenanted. The right teat was very large and on squeezing it milk exuded from it.

The urogenital chamber was carefully slit up along its dorsal wall, beginning at the external orifice, and on laying back the cut edges the aperture of the direct communication was most satisfactorily seen. There are also to be seen the two longitudinal ridges, which, starting from the inner side of the distal portion of each lateral canal, run along the ventral wall of the urogenital canal throughout its length. In this specimen in which the width of the canal was $\frac{5}{12}$ in., the ridges are $\frac{1}{8}$ in. apart and $\frac{3}{16}$ in. high, and, being situated one on either side of the middle line, their effect as seen from above is to divide the ventral moiety of the canal into three channels, viz. a median one blocked at its anterior end, and two lateral ones leading to the two lateral canals. The median channel is marked along its median line by a slight ridge, which, for the last quarter of an inch at its anterior end, increases gradually in height until at its extreme end it reaches the level of the ridge on either side of it. On this median ridge the apertures of the direct communication and of the urethra are situated. The latter is just upon $\frac{1}{4}$ in. from the anterior end of the ridge. The former which is situated a little to one side of the summit of ridge, is $\frac{1}{8}$ in. in advance of the meatus urinarius.

Besides the two longitudinal ridges there are several slight unsymmetrical ridges in the lateral channels. Home and Owen do not seem to mention these ridges in the urogenital passage, but Lucä has described them as seen in his specimens, and on the whole his description agrees very well with what I have seen. As Lucä points out when the free edges of these ridges are in contact the effect is to divide the urogenital passage into two divisions, one of which leads to the lateral canals, and the other to the median vaginal canal and the urethra.

(*b.*) These are the organs of an adult female, whose pouch was large and well developed but contained no young one. On slitting up the dorsal wall of the urogenital passage as before, the aperture of the direct communication was found to be larger and to have thicker lips than in the previous case. The ridges are just as in that specimen, except that they are somewhat thicker and flatter and consequently not so high.

(*c.*) These are the organs of a small female whose skin on the flat measures 27 inches from the tip of the nose to the base of the tail. Her skull shews but one premolar and two molars on each side of each jaw. The pouch and teats were rudimentary and the ovaries are destitute of corpora lutea. On these grounds in conjunction with the examination of sections I conclude that she had never brought forth young.

Having cut off the upper part of the mesial cul-de-sac, the lateral canals, and the lower part of the urogenital canal, the intervening part was sectionized, beginning at its proximal end.

The sections through the bottom of the cul-de-sac shew the presence of a longitudinal septum. On getting further down the sections still shew an aperture corresponding to that of the cul-de-sac in the earlier sections. It is considerably wider from side to side than the urethral aperture, through not quite so high from above downwards. It very gradually narrows from side to side until in sections in which the urogenital canal appears it diminishes to a mere pinhole situated in the middle line, between the urethra and urogenital passage but slightly nearer to the former and then finally disappears. Wishing to know where this took place the succeeding sections were carefully counted, until the meatus urinarius appeared, which was in the thirty-fourth section after the disappearance of the pinhole. In the last section in which it appears the hole is $\frac{1}{30}$ in. from the summit of the median ridge.

In Lucä's description of his young *H. Bennettii* he says that on carefully slitting up the wall of the median cul-de-sac and that of the urogenital passage towards one another, he found that while there was no communication between the two cavities their mucous membranes were separated from one another by a layer of connective tissue, at most $\frac{1}{8}$ mm. thick.

In his Leçons de Comp. Anat. Cuvier says, " en introduisant un stylet dans cette partie (median cul-de-sac) qui n'est plus qu 'un canal étroit chez le kanguroos—Téthys, je n'ai trouvé qu'un membrane très mince qui le séparait de la cavité correspondante du vagin, (urogenital passage) uh peu au-dessons de l'orifice de l'urètre."

These two instances seem to me to show pretty much the same thing as my specimen.

(*c*.) These organs belonged to a small female with a rudimentary pouch and teats. On slitting up the urogenital canal there is no other aperture to be seen but that of the meatus urinarius. I have not been able as yet to sectionize this specimen, but in the mean time it would seem to be like the previous one.

Halmaturus ruficollis.—I have examined five specimens belonging to this species. Of four which I got myself, each had a young one in the pouch. The fifth had a large pouch but no young one. All five shew the existence of the direct communication between the median vaginal canal and the urogenital passage.

The ridges in this species have the same relative arrangement as in *Osphranter robustus*, but their height is not so great. In one case the two longitudinal ridges were not quite ⅛ in. apart. There is slight variation in different specimens in the situation of the apertures both of the urethra and of the direct communication, since sometimes they are on the summit of the median ridge, at other times slightly to one or other side of it. In one specimen the median ridge was confluent with one of the lateral ridges and the two apertures were situated at the base of the compound ridge.

Petrogale penicillata.—I have examined the organs of eleven animals belonging to this species. Of these each of eight had a young one in the pouch, one had a large but empty pouch and two were young specimens with rudimentary pouches. Nine of these shew a direct communication between the median vaginal canal and the urogenital sinus. The ridges in this species are relatively as large and as well marked as in the previous cases, There are also slight variations in the positions of the two apertures with regard to the median ridge. Except in one case these nine specimens call for no further comment. In the case referred to, on slitting up the urogenital passage but one aperture about ¼ inch long, which is longer than usual, was to be seen. On further examination this proved to be the aperture of a small cavity into which the two canals open, and on the wall of which the two orifices are easily made out.

The two remaining specimens at the time of their being shot were set aside as being probably in the virgin condition. In both cases the pouches and teats were rudimentary, the ovaries shew no corpora lutea, and the organs were so small that twenty sections from the region of the embouchures of the lateral canals are easily accommodated under a ¾ in. square cover-glass.

In the first of them examined the sections beyond the difference in size are very similar to the corresponding ones from No. (*c.*) *Osphranter robustus*. In sections in which the urogenital canal first appears, the prolongation of the cavity of the mesial cul-de-sac appears as an arc of a circle with its concavity towards the urethra. Its height from above downwards is about one half, and its width from side to side about twice, the corresponding measurements of the urethra. The following changes then take place. The width of the aperture from side to side gradually decreases, but on one side more than the other, until instead of projecting beyond the urethra on both sides it now does so on one side only. Next it appears split into four by transverse partitions, showing that the bottom of the cavity is nearly reached. The same thing happens in *Osphranter robustus*, No. (*c.*). Two of the holes then disappear, the remaining two being very small and situated to one side of the middle line. In the fifth section after this the cavity comes to an end, the last trace of it being situated just below and close to one end of the elliptical urethra. Two sections however before this happens there has become visible in the middle line, about half way between the urethra and the urogenital passage, a very minute transverse slit lined by epithelium, quite away from the aperture of the median vaginal prolongation. In the first two sections in which it appears the transverse slit is rather indistinct and all efforts with the high power to trace it in preceding sections have failed. In the eighth section after its first appearance it opens by a narrow duct into the urogenital passage.

In the other specimen the same condition as has been described in *O. robustus* No. (*c*,) was met with. That is the cavity of the mesial cul-de-sac gradually diminished in size and finally disappeared, and in the forty-second section after this the urethra entered the urogenital canal.

How to account for the difference between these two specimens, otherwise so much alike I do not know. In the first of the two there is certainly no direct communication. If there had been any signs of pregnancy the condition met with would have been perhaps more intelligible. As it is I refrain at present from making any further remarks in the hope of shortly having further opportunities of investigating this point.

In conclusion I have to thank my friends Messrs. Baker, Morley, and Webb for assistance in getting specimens and in other ways. I have also to thank Mr. Ramsay, F.L.S., of the Museum for his kind help in determining the species to which one of my specimens belonged.

DESCRIPTION OF TWO NEW SPECIES OF SNAKES.

BY THE HON. WILLIAM MACLEAY, F.L.S.

In the following paper I give the descriptions of two Snakes recently sent to Mr. E. P. Ramsay by his brother Mr. James Ramsay, both specimens taken on his station near Fort Bourke.

The first is one of the very venomous Family of *Elapidæ*, and is so distinct in many respects from all of the genus *Diemenia* hitherto seen, that it is with some reluctance that I place it under that genus. The other snake is of the Family *Pythonidæ* and is I think not a full grown specimen. Both species are probably inhabitants of the great plains of the interior only, as they differ very much from the species usually found in the coast and mountain country of Australia.

DIEMENIA FEROX.

Scales in 23 rows.
Anal plates 2.
Abdominal plates 235.
Subcaudal plates $\frac{60}{60}$.
Total length 82 inches.
Length of head $1\frac{3}{4}$ inch.
Length of tail 12.

Body cylindrical and moderately robust; tail tapering and rather short. Head short, broad, rather depressed and very broadly rounded at the muzzle. The rostral shield is broad and low; the anterior frontals are very much smaller than the posterior, the lateral angle of these touches the second labial shield between the anterior ocular and nasal shields; the vertical shield is rounded and narrowed behind, and is longer than its width at the base; the superciliaries are shorter and narrower than the vertical; the anterior ocular is large and divided throughout by a very deep longitudinal groove; the lower posterior ocular is elongate, the last upper labial is very large. The scales are small and convex behind the head, becoming more elongate on the body, those nearest the ventral plates being much broader, but always less broad than in other species of *Diemenia*. The colour of the head and all the body except the abdominal and subcaudal plates, is of a glossy black, the ventral surface is of a yellowish-white. The poison fang is large and on each side of the lower jaw there is a series of long sharp teeth.

This is the most formidable looking of all the venomous Australian snakes I have seen, and the broad bull dog-like head adds materially to the ferocity of its appearance.

ASPIDIOTES RAMSAYI,

Scales in 53 rows.
Abdominal plates 293.
Subcaudal plates $48\frac{4}{4}$.
Anal plates 2.
Total length 75 inches.
Length of tail 9 inches.
Length of head 3 inches.

Body robust and compressed, tail tapering, moderately long. Head large, the occiput broad, rather convex and covered with small scales. The rostral shield is pointed above, there are three pairs of frontal shields, the second pair longest and not distinctly divided; the vertical is large and hexagonal and not longer than broad, there are two loreals; the eye is surrounded by nine shields including the superciliary, there are 14 upper labials, all higher than long; the first seven of the lower labials are narrow. The colour is of a greyish-brown variegated with indistinct darker brown bands and spots over the entire upper surface from the head to the tail; the ventral plates are yellowish, the basal portion of each plate being dusky.

The genus *Aspidiotes* was founded by the late Mr. Krefft for the reception of a species which he named *melanocephalus* ("Snakes of Australia, page 23, plates 3 and 5 fig. 4.") and which came originally from Port Denison, though subsequently found in other parts of North Eastern Queensland. The species now described is very distinct, but the generic characters are sufficiently near to justify my placing them together.

ON THE PLANTS OF NEW SOUTH WALES—No. VI.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

Class II. MONOCOTYLEDONS.

Of the monocotyledonous orders represented in Australia, eight have the ovary inferior, and of these the Orchids are by far the most numerous. In comparing the species recorded for the eastern colonies, the following is the result:

	Orders.	Genera.	Species.
Victoria	4 ..	29 ..	76
New South Wales ..	7 ..	51 ..	150
Queensland	8 ..	64 ..	129

The numbers here given may be regarded simply as an approximation, and as the scrubs of Queensland become better known, the species for that colony will be considerably increased. Imperfect, however, as the estimate is, it gives a fair idea of the genera represented in the respective colonies and of the range to which they are subject. Four orders, viz. *Scitamineæ*, *Burmanniaceæ*, *Taccaceæ*, and *Dioscorideæ* do not extend to Victoria, but the *Orchideæ* are fairly distributed through the three colonies, Victoria having 22 genera and 62 species, New South Wales 35 genera and 126 species, and Queensland 42 genera and 94 species. In this section of the Monocotyledons, the Orchids are by far the most interesting, as being one of "the most sharply defined and numerous" of orders, and comprising some of the most beautiful of Australian flowers. *Dendrobium speciosum*, was one of the first species to invite the attention of early collectors, and *Calanthe veratrifolia*, which has recently been found to extend to the Blue Mountains, has long been cultivated in Europe. *Phaius grandifolius* is also another admired plant, but perhaps, the most beautiful of orchids yet known in New South Wales is *Sarcochilus Fitzgeraldi*, distinguished by its long racemes of flowers "snowy white spotted with rich lake or maroon." This, as well as the preceding, is elegantly figured amongst Mr. Fitzgerald's "Australian Orchids." The species of *Galeola* are climbing, leafless epiphytes, sometimes ascending to a great height, closely adhering to the stems of trees, and throwing out rootlets opposite the bracts. The smaller species occurs in the neighbourhood of Sydney and Liverpool, but the larger one belongs rather to the northern parts of the colony and Queensland. *Prasophyllum elatum* is the tallest of our terrestrial orchids, and *Oberonia palmicola*, *Bolbophyllum minutissimum*, and *Corysanthes unguiculata* amongst the smallest of the order. The genus *Diuris*, which has at least 10 species in New South Wales, is peculiar to Australia, and as Mr. Bentham remarks, is not to be confounded with any other. *Spiranthes australis* has a wide range over Asia and part of Europe, whilst the following genera are represented in New Zealand, *Dendrobium*, *Bolbophyllum*, *Sarcochilus*, *Gastrodia*, *Thelymitra*, *Adenochilus*, *Corysanthes*, *Pterostylis*, *Orthoceras*, *Prasophyllum*, *Microtis*, *Cyrtostylis* and *Caladenia*. *Sarchochilus parviflorus* is one of our most southern species, common to Victoria and Tasmania. *Glossodia major* is remarkable for its sweetly scented leaf, whilst *Caleana* and *Drakæa* have the labellum so irritable that the least breeze causes it to descend like a lid on the flower. These genera extend to West Australia, and the late Mr. Drummond called the one "The Fly Catching" and the other "The Hinged Orchid." He says of the former, "In this Orchid, *C. nigrita*, the anthers are placed in the lower part of the flower, and the upper part (the lid), which I think must be the stigma, has to pass and repass them as the flower opens and shuts. When touched with anything, the lid instantly closes, but soon opens again if it catches nothing; when it captures an insect, it remains shut longer than I have continued to watch." Mr. Fitzgerald, who has figured *C. major* and *C. minor*, gives a very interesting account of the mode in which he supposes they are fertilised by means of insects. He says that they are sometimes destroyed by the process, and that the usual time for the flower to remain shut when no insect is enclosed, is from a quarter of an hour to an hour.

Of the other plants of this section *Vallisneria spiralis* and *Alpinia cærulea* are interesting, the former of which is curious in its mode of fertilisation, and the latter belongs to a genus known for medicinal properties. The Iris family is represented for the most part by *Patersonia* and *Libertia* the one exclusively Australian and the other extending to New Zealand and extra-tropical South America. *Sisyrinchium micranthum* has come from South America to this colony and is spreading in all directions.

Amongst the Amaryllideæ of New South Wales, the most remarkable is the Gigantic Lily *(Doryanthes excelsa)*, which soon attracted the notice of the early colonists and was elegantly figured by Bauer in the beginning of the present century. It has only a limited range, but *D. Palmeri* which was discovered by Mr. W. Hill, extends far into Queensland, being found on the Mackenzie River and elsewhere. The late Sir Thomas Mitchell was one of the first to record the beauties of our *Calostemma*. Of *C. candidum* (Lindl.), which he found on the Gwydir, he says, "I found there a flowery desert, the richest part of the adjacent country being quite covered with a fragrant white amaryllis in full bloom." Again on the Goulburn range he met with the pink coloured species *C. carneum* (Lindl.). This genus is endemic in Australia, and, as the name implies, is distinguished for the corona of the flower. The remaining order, that of Dioscorideæ is a small one, of which only one genus occurs in Australia. The large "Yam" *(Dioscorea sativa)*, which is common to many tropical and subtropical countries in the new and old world, is indigenous in Northern Australia and the Northern parts of Queensland, but the species with which we are more immediately concerned is *D. transversa*, which has a wide range, being found here and there from the neighbourhood of Newcastle to Rockingham Bay. According to the testimony of the late M. Thozet, the tubers of this species are eaten by the aboriginal natives under the name of *Kowar*, and that too without any preparation, which is remarkable, as many of the genus in consequence of their acrid properties cannot be used without roasting or boiling.

A LIST OF THE CYPRÆIDÆ FOUND ON THE COAST OF NEW CALEDONIA AND LOYALTY ISLANDS.

By RICHARD C. ROSSITER.*

In this paper I have brought together sixty species, some never before recorded from this part of the world. Mr. H. Crosse in 1869 published a list in the Journal de Conchyliologie 3rd series, Vol. XVII., p. 36-49, where he enumerated forty-five species. But more specimens of some of these so called species have been found, reducing his number to thirty-eight; the other seven being spurious species or monstrosities.

Genus CYPRÆA.

1. CYPRÆA ARGUS, Linn.

Reeve, Conch. Icon., pl. 3, fig. 8.

North Coast of New Caledonia; Isle of Pines and Loyalty Islands.

2. CYPRÆA ASELLUS, Linn.

Reeve, Conch. Icon., pl. 18, fig. 98.

Nouméa; Loyalty Islands, found under stones and coral.

3. CYPRÆA CARNEOLA, Linn.

Reeve, Conch. Icon., pl. 6, fig. 19.

New Caledonia; Loyalty Islands and Isle of Pines.

Found very large, as large as *C. talpa*, and has often been taken by non-scientific collectors for *C. aurantia*.

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*Communicated by Mr. J. Brazier, C.M.Z.S.

4. **Cypræa cribellum**, Gaskoin.

Sowerby, Thes. Conch., pl. 20, fig. 165-166.

New Caledonia. Very rare.

Two specimens have been found by Mr. Balansa. The species is rather common at the Mauritius.

5. **Cypræa cylindrica**, Born.

Reeve, Conch. Icon., pl. 14, fig. 64.

Nouméa, specimens very fine.

6. **Cypræa felina**, Gmel.

Reeve, Conch. Icon., pl. 19, fig. 105 *b*.

Sowerby, Thes. Conch. pl. 32, fig. 392-395.

Lifou, Loyalty Islands; not common.

7. **Cypræa fimbriata**, Gmel.

Reeve, Conch. Icon., pl. 18, fig. 92.

Sowerby, Thes. Conch., pl. 32, fig. 390-391.

Lifou, Loyalty Islands; not common.

8. **Cypræa hirundo**, Linn.

Reeve, Conch. Icon., pl. 19, fig. 104.

Sowerby, Thes. Conch., pl. 32, fig. 382-384.

Nouméa, New Caledonia and Loyalty Islands.

9. **Cypræa interrupta**, Gray.

Zoological Journal, Vol. I., page 376, 1824.

Reeve, Conch. Icon., pl. 19, fig. 103, 1846.

Cypræa Rhinoceros, Souverbie, Journal de Conch., Vol. 13, page 156, pl. 5, fig. 1, 1865.

Sowerby, Thes. Conch., pl. 27, fig. 271-274, pl. 37, fig. 535.

Ilot Amedée, or Lighthouse Island, rather common. Art Island, North New Caledonia *(R. P. Montrousier)*.

10. CYPRÆA IRRORATA, Solander.

Gray, Zool. Jour., Vol. 4, page, 80, 1828.

Reeve, Conch. Icon. pl. 22, fig. 126, 1846.

Sowerby, Thes. Conch., pl. 29, fig. 304, 305, 1870.

Mare, Loyalty Islands, very rare.

11. CYPRÆA ISABELLA, Linn.

Reeve, Conch. Icon., pl. 12, fig. 51.

Sowerby, Thes. Conch. pl. 4, fig. 16-17.

Cypræa controversa, Gray, Zool. Jour. Vol. I., p. 144, 1825, Vol. 4, p. 71, 1828.

Sowerby, Thes. Conch., pl. 27, fig. 258.

Nouméa, New Caledonia, and Loyalty Islands. Art Island, north coast *(R. P. Montrousier)*.

12. CYPRÆA MICRADON, Gray.

Zoological Jour., Vol. 4, p. 71, 1828.

Reeve, Conch. Icon., pl. 24, fig. 139.

Sowerby, Thes. Conch., pl. 32, fig. 385-386.

Nouméa, New Caledonia, and Loyalty Islands.

13. CYPRÆA NEGLECTA, Sowerby.

Reeve, Conch. Icon., pl. 19, fig. 100.

Sowerby, Thes. Conch., pl. 32, fig. 374-375.

Nouméa, not common; Prony Bay, south coast, collected by Mr. Brazier.

14. CYPRÆA STOLIDA, Linn.

Reeve, Conch. Icon., pl. 14, fig. 67.

Sowerby, Thes. Conch., pl. 30, fig. 327-328.

Cypræa ferruginea, Humph., Cab. Cat. No. 113.

,, *rubiginosa*, Gmel., Syst. Nat. p. 3420.

,, *Crossei*, Marie, Journ de Conch. Vol. 17, p. 16, pl. 1, fig. 3, 1869.

Art Island, north coast *(R. P. Montrouzier)*. Nouméa, *(E. Marie)*. My own specimens come from Isle Nou and the Isle Ouen near the Isle of Pines. Pere Montrouzier has a fine series of *C. stolida* showing the different stages up to the variety *C. Crossei*.

15. CYPRÆA TABESCENS, Solander.

Dillwyn, Cat. Vol. 1, p. 463, 1817.

Reeve, Conch. Icon. pl. 14, fig. 66.

Sowerby, Thes. Conch., pl. 27, fig. 261-265.

Loyalty Islands, found in very fine condition.

16. CYPRÆA TALPA, Linn.

Reeve, Conch. Icon., pl. 2, fig. 5.

Sowerby, Thes. Conch. pl. 12, fig. 74-75-76.

Loyalty Islands; Isle of Pines and New Caledonia, specimens very fine, not common.

17. CYPRÆA TESTUDINARIA, Linn.

Reeve, Conch. Icon., pl. 3, fig. 9.

Sowerby, Thes. Conch. pl. 13, fig. 83, 84.

Loyalty Islands; Isle of Pines and New Caledonia; found very large, rare.

18. CYPRÆA URSELLUS, Gmel.

Kiéner, Coq. Viv. p. 99, pl. 33, fig. 4.

Nouméa; *(R. C. Rossiter).* Art Island, north coast of New Caledonia, *(R. P. Montrouzier);* very rare. I believe that this is only a variety of *C. felina*.

GENUS LUPONIA, Gray.

19. LUPONIA AURANTIA, Martyn.

Reeve, Conch. Icon., pl. 4, fig. 11.

Cypræa aurora, Solander, Sowerby, Thes. Conch. pl. 2, fig. 7-8.

Lifou, Loyalty Islands.

I have one specimen in my collection, got in 1877 in a native fish pot; it is the first and only one found in these waters. It is a fine coloured specimen, larger than any I have yet seen from Fiji Islands, or the Solomon Islands, where the species is smaller but of a richer flesh colour.

20. LUPONIA BREGERIANA, Crosse.

Journ. de Conch., Vol. 16, p. 277, 1868, Vol. 17, pl. 1, fig. 2, 1869.

Sowerby, Thes. Conch. pl. 37, fig. 536.

Nouméa Harbour, 8 fathoms; Isle of Pines, south of New Caledonia, dredged by Lieut. Heurtel. Mr. Sowerby makes this fine and rare species a variety of *C. Walkeri*, Gray. The *C. Bregeriana* is very peculiarly besprinkled with fine white specks which may be observed to be imbedded in the enamel something like the *C. testudinaria*. These white specks are wanting in *C. Walkeri*.

21. LUPONIA CAURICA, Linn.

Reeve, Conch. Icon. pl. 11, fig. 46.

Sowerby, Thes. Conch. pl. 23, fig. 188-189-197.

Loyalty Island; New Caledonia and Isle of Pines.

The variety *obscura* differs from the type form by having the dorsal surface of a blackish brown; they are found at Isle Nou, Isle Ouen, Pomte Sud, and Prony Bay, New Caledonia.

22. **Luponia clandestina**, Linn.

Reeve, Conch. Icon., pl. 19, fig. 106.

Sowerby, Thes. Conch., pl. 19, fig. 139-140-141.

Cypræa moniliaris, Lamarck.

Nouméa, New Caledonia, very common. Loyalty Island and Isle of Pines.

23. **Luponia cribraria**, Linn.

Reeve, Conch. Icon., pl. 16, fig. 81.

Sowerby, Thes. Conch., pl. 20, fig. 163-164.

Cypræa comma, Perry, Conch. pl. 21, fig. 5.

Nouméa, New Caledonia and Loyalty Islands. I have a specimen from Isle Ouen of a blackish brown on the back only showing a few of the white blotches and not the white round spots; the specimen is one inch and a half long,

24. **Luponia cruenta**, Gmel.

Reeve, Conch. Icon., pl. 10, fig. 38.

Sowerby, Thes. Conch., pl. 23, fig. 185-186-187.

Cypræa variolaria, Lamarck.

Ilot Amedée or Lighthouse Island near the entrance to the Port of Nouméa, rare.

25. **Luponia eburnea**, Barnes.

Reeve, Conch. Icon., pl. 9, fig. 35.

Sowerby, Thes. Conch., pl. 17, fig. 108.

Nouméa Harbour, obtained by dredging, found also at the Loyalty Island and Isle of Pines.

26. **Luponia erosa**, Linn.

Reeve, Conch. Icon., pl. 11, fig. 43.

Sowerby, Thes. Conch., pl. 28, fig. 110-115.

New Caledonia; Loyalty Islands, Isle of Pines.

27. LUPONIA ERRONES, Linn.

Reeve, Conch. Icon., pl. 13, fig. 56.

Cypræa ovum, Gmeln., *C. subflava*, Gmel., *C. olivacea*, Lam.

New Caledonia; Loyalty Islands; Isle of Pines.

I have specimens from Nouméa with the back of a blackish-brown, the base arched in the centre, rostrated at both ends, the teeth on the columella nearly absent; teeth on the outer lip very large, and placed deep down. One specimen has the appearance of having been dug out like a native canoe.

28. LUPONIA ESONTROPIA, Duclos.

Reeve, Conch. Icon., pl. 16, fig. 80.

Lifou, Loyalty Islands, very rare. I have only seen one specimen, and that is in my collection.

29. LUPONIA FLAVEOLA, Linn.

Reeve, Conch. Icon. pl. 18, fig. 95.

Lifou, Loyalty Islands; Ilot Amedée or Lighthouse Island, New Caledonia.

This species has been confused with and called *C. spurca* by the collectors here, but is quite distinct and in no way related to the *C. spurca*, Linn. found in the Mediterranean. Mr. H. Crosse in the Journal de Conchyliologie 1869, p. 44, doubts the *C. spurca* being found in New Caledonia, on the authority of Pere Montrouzier.

30. LUPONIA GANGRENOSA, Solander.

Reeve, Conch. Icon., pl. 18, fig.

Loyalty Islands, rare.

I am not quite sure of this being *C. gangrenosa* from our waters, as it comes so near to *flaveola*.

31. Luponia Gaskoni, Reeve.

Reeve, Conch. Icon., pl. 22, fig. 122.

Lifou, Loyalty Islands.

I am not quite sure of this as the specimen is sea worn, it may be a worn *C. flaveola*.

32. Luponia helvola, Linn.

Reeve, Conch. Icon., pl. 15, fig. 72.

Cypræa citrina, Kiener, (non Gray).

Loyalty Islands, specimens very fine and large. New Caledonia; Isle of Pines.

33. Luponia lutea, Gronovius.

Reeve, Conch. Icon., pl. 20, fig. 110.

Cypræa Humphreysii, Gray.

Near Nouméa under stones in deep water; both varieties are very rare. The animal is scarlet red.

34. Luponia lynx, Linn.

Reeve, Conch. Icon. pl. 9, fig. 33.

Sowerby, Thes. Conch., pl. 15, fig. 85*, 86*, 87*, 88*.

Cypræa Kanelli, Linn., *squalina*, Gmel. *Cypræa Caledonica*, Crosse, var. Journ de Conch., Vol. 17, p. 41, pl. 1, fig. 1, 1869.

New Caledonia; Loyalty Island; Isle of Pines.

I exhibit several curious malformations, including the *C. Caledonica*. I may mention that most of the specimens of this species showing malformations are from New Caledonia and mostly in the neighbourhood of Nouméa.

35. LUPONIA MAPPA, Linn.

Reeve, Conch. Icon., pl. 6, fig. 18.

Sowerby, Thes. Conch. pl. 5, fig. 24-28.

Cypræa nigricans, Montrouzier, Journ de Conch., Vol. 23, p. 220, pl. 8, fig. 5, pl. 9, fig. 3, 1875.

Loyalty Islands; New Caledonia; Isle of Pines.

I have a splendid specimen found in a native fish pot at Lifou, Loyalty Islands; the dorsal surface is of a warm reddish tint, base bright pink with the aperture of a dark bright orange. I have another variety found on the reef at Isle Ouen, the back is of a blackish-brown, the dorsal opening very narrow with one branching to the left; base violet, dotted with brown, and a large violet-brown blotch on the left side, teeth orange red.

The variety *nigricans* Montrouzier was found at Kańola, east coast of New Caledonia. I have seen another specimen of *nigricans* in Pere Montrouzier's collection obtained at Conception near Nouméa under stones. Since then I have obtained another specimen, and consider the *nigricans* to be nothing more than distorted or malformed *Cypræa mappa*, Linn.

36. LUPONIA PANTHERINA, Solander.

Reeve, Conch. Icon. pl. 3, fig. 7.

Sowerby, Thes. Conch., pl. 11, fig. 69-71.

Lifou, Loyalty Islands, very rare.

I have seen two found there alive, although I have not got it in my collection from there; it was the Rev. Pere Lambert who obtained it.

37. LUPONIA PORARIA, Linn.

Reeve, Conch. Icon., pl. 18, fig. 99.

Sowerby, Thes. Conch., pl. 26, fig. 236-237.

Loyalty Islands; New Caledonia, not common.

38. Luponia punctata, Linn.

Reeve, Conch. Icon., pl. 19, fig. 101.

Loyalty Islands, after gales. Art Island, north New Calodonia *(Montrouzier)*. Nouméa *(Brêger)*.

39. Luponia vitellus, Linn.

Reeve, Conch. Icon., pl. 5, fig. 14.

Sowerby, Thes. Conch., pl. 6, fig. 32-34.

Cypræa salita, Rumph., *dama*, Humph., *fulva*, Gmel.

Loyalty Islands; New Caledonia; Isle of Pines.

This species is also found distorted or malformed. I send some specimens showing the curious malady which affects this species alone in New Caledonia; they are all from the neighbourhood of Nouméa.

40. Luponia subviridis, Reeve.

Conch. Icon., pl. 12, fig. 48.

Sowerby, Thes. Conch., pl. 24, fig. 176-178.

Nouméa Harbour, obtained by dredging. Art Island, north New Caledonia *(Montrouzier)*.

I have a pair dredged that measure 2½ inches long and stout in proportion.

41. Luponia tigris, Linn.

Reeve, Conch. Icon., pl. 4, fig. 12.

Sowerby, Thes. Conch., pl· 21, fig. 172-175.

Loyalty Islands; New Caledonia and Isle of Pines, very common.

I have three very fine varieties from the Grand Reef near Nouméa, one specimen has the margins of a fine cream colour the dorsal surface of a fine rich burnt orange, with darker spots, the second specimen is very pale, more of a dirty white, with the spots nearly blended one with the other, dorsal surface light yellow; the third specimen has the dorsal surface of a fine rich cream-yellow mottled with round and oblong spots and blotches of a blackish-brown colour, margins with regular large blackish blue clouded spots.

42. Luponia Walkeri, Gray.

Reeve, Conch. Icon., pl. 12, fig. 50.

Sowerby, Thes. Conch. pl. 18, fig. 123-124-125.

Art Island, north coast of New Caledonia.

This is given on the authority of Pere Montrouzier. I have never seen the species from here; it may be obtained at the north by dredging; my kinsman Mr. Brazier informs me that he dredged splendid specimens off the north-east coast of Australia and at Darnley Island, Torres Straits, at 25-30 fathoms.

43. Luponia zigzag, Linn.

Reeve, Conch. Icon., pl. 18, fig. 97.

Sowerby, Thes. Conch., pl. 19, fig. 135-138.

Loyalty Islands, a few have been found, very rare.

Genus ARICIA, Gray.

44. Aricia annulus, Linn.

Reeve, Conch. Icon., pl. 15, fig. 71.

Sowerby, Thes. Conch., pl. 26, fig. 252-253.

Cypræa Noumeensis, Marie, Journ de Conch., Vol. 17, p. 18, pl. 2, fig. 6, 1869.

Loyalty Islands; New Caledonia; Isle of Pines, very common.

The variety or malformation *C. Noumeensis* is very rare, not having been found by me during a residence of eleven years, what few have been found were near Nouméa.

45. ARICIA ARABICA, Linn.

Reeve, Conch. Icon., pl. 1, fig. 2.

Sowerby, Thes. Conch., pl. 10, fig. 59, 61, pl. 28, fig. 282-283.

Cypræa amethystia, Linn., *fragilis*, Linn., *elegantina*, Duclos.

New Caledonia; Loyalty Islands; Isle of Pines, very common.

I have a fine series of specimens showing the various stages of this species up to the malformed or distorted forms of the variety *Cypræa elegantina* of Duclos.

46. ARICIA CAPUT-SERPENTIS, Linn.

Reeve, Conch. Icon., pl. 11, fig. 44.

Sowerby, Thes. Conch. pl. 12, fig. 72-73.

Cypræa reticulum, Gmel., *albella*, Lam.

Loyalty Islands; New Caledonia; Isle of Pines, common.

We sometimes get the variety *Cypræa caput-anguis*, Philippi, but it is very rare.

47. ARICIA MAURITIANA, Linn.

Reeve, Conch. Icon., pl. 1, fig. 1.

Sowerby, Thes. Conch., pl. 9, fig. 51, 52.

Cypræa fragilis, Born., *regina*, Chem., *trifasciata*, Gmel.

Loyalty Islands; New Caledonia, very common.

I have a jet black variety from the north of New Caledonia showing no trace of the spots.

48. ARICIA MONETA, Linn.

Reeve, Conch. Icon., pl. 15, fig. 74.

Sowerby, Thes. Conch., pl. 26, fig. 244-251.

Cypræa icterina, Lam., An. sans Vert. Vol. 7, p. 387.

Cypræa Barthelemyi, Bernardi, Journal de Conch., Vol. 9, page 48, pl. 1, fig. 3-4, 1861.

New Caledonia; Loyalty Islands; Isle of Pines. It is very common; the variety *icterina* is found, but less common; the variety *Barthelemyi* is very rare, although I have several monstrosities obtained at Isle Nou, near Nouméa, which have the posterior end rostrated with the canal nearly closed, the base in some is quite flat, others again are arched and excavated in the centre.

49. ARICIA OBVELATA, Lam.

Reeve, Conch. Icon., pl. 15, fig. 69.

Sowerby, Thes. Conch., pl. 26, fig. 254-255.

Loyalty Islands, very rare. Art Island, north New Caledonia *(Montrousier.)*

50. ARICIA VENTRICULUS, Lam.

Reeve, Conch. Icon., pl. 8, fig. 28.

Sowerby, Thes. Conch., pl. 1, fig. 3-4.

Cypræa achatina, Solander; *carneola*, Martyn (non Linn).

Lifou and Mare, Loyalty Islands, very fine and large.

GENUS CYPRÆOVULA, Gray.

51. CYPRÆOVULA ADAMSONI, Gray.

Reeve, Conch. Icon., pl. 24, fig. 135.

Anse Vata, near Nouméa, *(Mr. Balansa).*

I know of only two specimens found since the first by Mr. Balansa a few years ago, specimens white.

GENUS EPONIA, H. and A. Adams.

52. EPONIA ANNULATA, Gray.

Reeve, Conch. Icon., pl. 21, fig. 114.

Sowerby, Thes. Conch. pl. 31, fig. 339, 340.

Isle Amedee, New Caledonia, very rare.

53. **Eponia cicercula**, Linn.

Reeve, Conch. Icon., pl. 21, fig. 116.

Sowerby, Thes. Conch., pl. 31, fig. 343-346.

Loyalty Islands; New Caledonia.

54, **Eponia globulus**, Linn.

Reeve, Conch. Icon. pl. 21, fig. 118.

Sowerby, Thes. Conch. pl. 31, fig. 347-348.

Loyalty Islands, rare.

Genus PUSTULARIA, Swainson.

55. **Pustularia limacina**, Lam.

Reeve, Conch. Icon., pl. 16, fig. 82A.

Sowerby, Thes. Conch., pl. 25, fig. 223-224.

Cypræa interstincta, Wood, Index Supp., pl. 3, fig. 9.

Loyalty Islands, rather common, Nouméa, New Caledonia, rare.

56. **Pustularia nucleus**, Linn.

Reeve, Conch. Icon., pl. 15, fig. 70.

Sowerby, Thes. Conch., pl. 33, fig. 399-400.

Loyalty Islands, common after gales.

57. **Pustularia staphylæa**, Linn.

Reeve, Conch. Icon., pl. 16, fig. 82B.

Sowerby, Thes. Conch., 25, fig. 228-229.

Loyalty Islands; Nouméa, New Caledonia, specimens very fine.

I have a malformed specimen from Isle Nou, pear-shaped, having the extremities rostrated and curved to the right, base reddish brown, teeth extending across on each side in conspicuous ridges, back with a rather deep central longitudinal groove.

GENUS TRIVIA, Gray.

58. TRIVIA CHILDRENI, Gray.

Reeve, Conch. Icon., pl. 21, fig. 115.

Sowerby, Thes. Conch., pl. 33, fig. 403-405.

Loyalty Islands; Neew Caledonia, not very rare.

59. TRIVIA EXIGUA, Gray.

Desc. Cat. Cyp., p. 15, 1832.

Cypræa tremeza, Duclos, Mag. de Zoologie, pl. 25, 1833; Reeve, Conch. Icon., pl. 26, fig. 148; Sowerby, Thes. Conch. pl. 36, fig. 510-511.

Cypræa gemmula, Gould., Proc. Bost. Soc., Vol. 2, p. 27, 1845.

Lifou, Loyalty Islands, found on the beaches after heavy gales. Pot Island, north coast of New Caledonia, (*Montrouzier*(.

60. TRIVIA ORYZA, Lam.

Kiener, Coq. Viv. p. 143, pl. 52, fig. 2.

Cypræa oriza, Crosse, Journ de Conch, Vol. 17, p. 49, 1969.

Cypræa nivea, Solander; *pediculus*, Linn. (in part).

Nouméa and Loyalty Islands.

DESCRIPTION OF A NEW SPECIES OF THERAPON FROM THE MACQUARIE RIVER.

BY E. P. RAMSAY, F.L.S., CURATOR OF THE AUSTRALIAN MUSEUM, SYDNEY.

THERAPON MACLEAYANA, *sp. nov.*

D. $\frac{12}{11}$. A. $\frac{3}{8}$.

General form convex, above slightly concave from the first dorsal to the snout; the eye large, its diameter is twice in the distance from the snout to the centre of the orbit, and five times in the head; the space between the orbits is one-third greater than the diameter of the eye; the head is four times in the total length; the caudal fin emarginate; height of body from between the first dorsal spine and the base of ventral is three times and a half in the total length; the fifth dorsal spine is the longest, nearly three times as long as the first, which is short and stout; the third anal spine is very strong and thick, twice the length of the first and as long as the fifth dorsal; scales small, about 94 rows along the lateral line, preoperculum strongly serrated at its lower angle and hinder margin; operculum with two spines, the lower one often double; preorbital and coracoid serrated, the maxillary reaches to the perpendicular from the first nostril, no scales on the snout or upper part of head. General colour blackish, the belly silvery, fins opalescent when alive.

I found this species spawning in the Macquarie River in the month of November, and at the same time the following species were also taken.

THERAPON RICHARDSONI, *Casteln.*

The Silver Perch.

CTENOLATES FLAVESCENS, *Gunth.*

The Yellow Belly.

The colour when alive is of a beautiful pale olive-green, the belly silvery, tinged with golden-yellow, in full grown specimens the back becomes of a darker olive-green, fins opalescent, the eye black with a narrow white ring, head like the back. They spawn in October and November, young fry apparently of this species were taken about half an inch in length.

OLIGORUS MACQUARIENSIS, *Cuv. et Val.*

Fine specimens of this beautiful fish were taken, from two or three ounces in weight up to six pounds; they vary considerably in colour, some being of a pale golden-yellow with olive vermiculations on the back, others olive-green or olive-brown above, and golden-yellow or yellowish-olive below. I also found swarms of the young fry about half an inch in length.

The Cat Fish *Copidoglanis tandanus* was also caught, all five species being taken with rod and line from the same spot.

DESCRIPTION OF TWO NEW BIRDS FROM THE SOLOMON ISLANDS.

BY E. P. RAMSAY, F.L.S., &c.

HALCYON SOLOMONIS, *sp. nov*

All the upper surface blue, with a slight wash of greenish on the head and back, quills black, the outer webs of a rich cobalt-blue; tail blue, vermiculated, a slight tinge of green on outer webs; a stripe from the lower mandible under the eye greenish-blue, ear-coverts bluish back, lores black, no white spot or superciliary stripe, no white nape spot; collar round the neck white or slightly tinged with rufous, bounded in front by a narrow black line from the earcoverts; on either side of the chest nearly extending across it a rufous patch, the feathers all margined with blue, under wing coverts white, all the remainder of the under surface, and under tail-coverts white, bill black, a triangular patch of white at the base of the lower mandible, feet brownish.

A second specimen has a pure white broad collar, bounded above and below with black, and an irregular patch of feathers on the side of the chest, margined with blackish-green, the under wing coverts and all the remainder of the under surface white, no tinge of rufous anywhere on this specimen; in front of the eye from the nostril a narrow line of white, lores black, no superciliary stripe, head and back washed with greenish, blackish green next the collar on the interscapular region.

The young female, above dull greenish, with a wash of blue on the wings and tail, collar white tipped with rufous and with a distinct black broad band above and below, across the chest the feathers are margined with black; under wing coverts white, the outer series at the base of the primaries tipped with black, upper wing coverts margined with fulvous, a dull fulvous narrow stripe from the nostril to the eye; bill black, legs brownish.

In a large series examined, there is no nape patch and no superciliary stripe, the blue above is of a rich cobalt on the wings and tail, and frequently has no white or buff spot in front of the eye.

Measurements of Adults.

Total length from nostril..	7·4	7·7	7·6
Wing	3.6	3·65	3·7
Tail..	2·7	2·7	2·8
Tarsus	0·55	0·55	0·55
Bill from forehead ..	1·9	1·85	1·9
Bill from nostril	1·55	1·46	1·55
Sex	♂	♀	♂

This species is the representative of *H. chloris* in the Solomon Group. but may be distinguished in being of a much richer cobalt blue on the upper parts, and by having no nape patch or superciliary stripe, and in many specimens no white or fulvous spot in front of the eye.

In *H. Tristrami* (Layard),* the figure unfortunately does not correspond with the description and no measurements are given, but if we take the size in the plate at ⅔, then the bill from the nostril would only be 0·2 longer than an average sized specimen of *H. salamonis*. It is a pity Mr. Layard did not think it worth while, to give a description with measurements of this new bird —there is enough confusion already among the species of this group. *H. vagans* with which the bird *(H. Tristrami)* is compared has a well defined *nape patch*, I presume this spot is also found in *H. Tristrami* as no mention is made of its absence.

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*"Ibis," 1880, pl. xv., p. 459.

RHIPIDURA TENEBROSA, *sp. nov.*

The whole of the plumage rich dark olive-brown, less tinged with olive-brown on the head, wings and tail dull dark blackish brown, the outer webs of the feathers washed with olive-brown, all the tail feathers except the centre two largely tipped with white; under wing coverts tipped with ashy; the margin of the shoulders very minutely dotted with white; the median and greater series of upper wing-coverts with a spot of white margined with fulvous at the tips of each feather, forming two distinct curved rows of spots across the wing, the ventral feathers and the under tail-coverts tipped with white, tinged with fulvous; a few feathers in front of the eye, some about the ear-coverts and those of the throat tipped sparingly with white. The feathers of the forehead lanceolate, probably erectile; bristles strong, black, longer than the bill. Bill brown, lower mandible whitish, legs and feet brown. Total length 7 inches (in the flesh); wing 3·35; tail 3·95; tarsus 0·84; bill from forehead 0·65; from nostril 0·35.

The description has been taken from a specimen in spirits not in a good state. Sex ♀. ?

This species was shot at "Way Warre," on the Island of St. Christoval, Solomon Group, by Mr. Stephens of "Ugi."

NOTE ON THE RANGE OF PYCNOPTILUS FLOCCOSUS, GOULD, AND PACHYCEPHALA OLIVACEA, VIG. & H.

BY E. P. RAMSAY, F.L.S., &C.

In a former communication I think I mentioned the occurrence of *Pycnoptilus floccosus* in the Illawarra District, New South Wales.

I have now the pleasure of recording the receipt of two specimens obtained by our Taxidermist Mr. J. A. Thorpe, in the scrubs of the coast range near Wollongong. In habits and actions the birds closely resemble *Atrichia* and *Sphenura.*

In the Australian Museum there is a specimen also of another southern species, *Pachycephala olivacea,* obtained by Mr. George Masters some ten years ago, near Nelligen in the Shoalhaven District, Mr. Thorpe was fortunate enough to meet with this bird also, during the early part of this month (Nov.) near Wollongong in the same locality in which the *Pycnoptilus* occurred. We have now both sexes from the scrubs on the East coast near Sydney, and a comparison of these with South Australian and Tasmanian examples, shows no difference in plumage whatever. The males have an ashy brown band across the chest of the same tint as the head and hind neck; in the female the olive-brown of the under surface is not thus separated from the throat. There is no material difference in the size of either sexes or individuals.

NOTES AND EXHIBITS.

Dr. Cox exhibited several specimens of wood carvings from the Solomon Islands; also two drills used by the natives of Rubiana in building their canoes, and a fish-trap used by the natives of the same Island.

Mr. Brazier exhibited a very fine collection of the genus *Cypræa*—*hirundo* 2, *neglecta* 2, *cylindrica* 2, *errones* 3, *moneta* 4, *lynx* 5, var. *Caledonica* 1, *Isabella* 1, *caurica* var. *obscura* 3, *stolida* var. *Crossei* 2, *Arabica* 7, *vitellus* 4, *scurra* 1, *staphylæa* 1, *mappa* var. *nigricans* 2. These fourteen species were all distorted or malformed with the extremities rostrated, and the base arched. Three fine varieties of *C. tigris,* four varieties of *C. cribraria,* and one fine pink variety of *C. mappa.* These three species are normal.

Mr. Ramsay exhibited skins of some very beautiful birds from the Solomon Islands: *Ptilopus Lewisii*, Ramsay; *Ptilopus Eugeniæ* Gray; *Ptilopus Richardsii*, Ramsay; *Ptilopus Johannis*, Sclater; *Nasiterna Finschii*, Ramsay; *Charmosyna Margarettæ*, Tristram; *Rhipidura tenebrosa*, Ramsay.

The Hon. William Macleay exhibited dried specimens of the two plants described by Baron Müeller, also a large peculiarly-shaped gall of a manna-producing coccus on a gumtree branch, and a rare heteromerous beetle *(Zopherosis Georgii)*, both sent by Mr. Palmer. Mr. Macleay also exhibited some samples of a bark said to be used by the natives of New Caledonia and New Hebrides to procure abortion, and a mass of a kind of gutta-percha from a New Caledonian tree. These two exhibits were sent by Mr. E. L. Layard, C.M.G., British Consul, Noumea.

Mr. Fletcher exhibited a large number of microscopic sections. A special vote of thanks was accorded that gentleman for his very valuable paper on the uro-genital organs of the kangaroo.

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WEDNESDAY, 25TH DECEMBER, 1881.

The President J. C. Cox, M.D., F.L.S., &c., in the Chair.

MEMBERS ELECTED.

The Rev. John Milne Curran of Dubbo.

The President announced that the Council had elected Richard C. Rossiter, Esq., of Noumea, New Caledonia, a corresponding member of the Society.

DONATIONS.

From Baron Ferd. von Müeller, K.C.M.G.:—Vols. 2, 3, 4, 6, and 7 of his Fragmenta Phytographiæ Australiæ. Index perfectus ad Caroli Linnæi species plantarum. Organic constituents of plants and vegetable substances, and their chemical analyses by Dr. Wittstein, translated from the German by Baron von Müeller. Definition of a new tree from East Australia by Baron Müeller.

From the Royal Academy of Sciences at Stockholm, "Proceedings," years 1877 to 1880 and "Minnesord öfver Carl von Linné.

Southern Science Record No. 13, December 1881.

Journal of the Royal Microscopical Society, August, 1881.

From the Entomological Society of London, Transactions, 5 volumes, years 1876 to 1880.

PAPERS READ.

ON THE PLANTS OF NEW SOUTH WALES—NO. VII.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

Class II. MONOCOTYLEDONS.

The Monocotyledoneæ with ovary superior include three series viz. *Coronariæ*, *Nudifloræ*, and *Glumales*, the first having the perianth more or less distinctly in two series, the second with the perianth of small scales or none (except some *Alismaceæ*), and the third with flowers sessile within imbricate bracts or glumes. According to the most recent estimate for the three colonies, the numbers are as follows:

	Orders.	Genera.	Species.
Queensland.. ..	18 ..	160 ..	459
New South Wales..	17 ..	144 ..	419
Victoria	15 ..	121 ..	304

Of the Coronariæ, *Roxburghiaceæ* and *Pontederaceæ* are represented each by a solitary species in Queensland, whilst the *Pandaneæ* and *Aroideæ* do not extend to Victoria. The Palms, which are somewhat plentiful in Queensland, are rare in New South Wales and Victoria, four species occurring in the former, and one only in the latter colony. With regard to the Sedges and Grasses, they are distributed amongst all the colonies in the following proportions:

	Genera.	Orders.
Queensland	.. 64 ..	173
New South Wales	.. 62 ..	160
Victoria	.. 53 ..	101

The Introduced Plants of this class are becoming widely diffused throughout the Colony, especially the grasses. I have included *Cynodon dactylon*, (Pers.) and *Paspalum distichum*, (Linn.) amongst the indigenous species, but it seems highly probable that they accompanied the early settlers. With respect to the first, which has a wider range than the other, Mr. Bentham remarks that, "although now generally spread over the settled parts of extra-tropical Australia, it may have been introduced with cultivation as suggested by R. Brown."

1. *Sisyrinchium Bermudianum*, (Linn.)
2. ,, *micranthum*, (Cav.)
3. *Trichinium bulbocodium*, (H. K.)
4. *Sparaxis tricolor*, (H. K.)
5. *Zephyranthes atamasco*, (Herb.)
6. *Allium fragrans*, (Vent.)
7. *Commelyna Africana*, (Willd.)
8. *Stenotaphrum Americanum*, (Schrank.)
9. *Apluda mutica*, ? (Linn.)
10. *Anthoxanthum odoratum*, (Linn.)
11. *Phalaris canariensis*, (Linn.)
12. *Holcus lanatus*, (Linn.)
13. *Avena fatua*, (Linn.)
14. *Dactylis glomerata*, (Linn.)
15. *Poa annua*, (Linn.)
16. ,, *glauca*, (E. B.)
17. ,, *pratensis*, (Willd.)

18. *Briza maxima*, (Linn.)
19. ,, *minor*, (Linn.)
20. *Bromus mollis*, (Linn.)
21. ,, *sterilis*, (Linn.)
22. *Ceratochloa unilioides*, (DC.)
23. *Lolium temulentum*, (Linn.)
24. ,, *perenne*, (Linn.)
25. *Hordeum nodosum*, (Linn.)

The whole number of such plants for New South Wales may be about 150 or 160, whilst the indigenous species generally may be thus arranged:

	Orders.	Genera.	Species.
Thalamifloræ	22	68	174
Discifloræ	13	60	174
Calycifloræ	16	124	524
Monopetalæ	30	201	654
Monochlamydeæ	17	107	392
Gymnospermeæ	1	1	2
Monocotyledoneæ	26	195	579
	125	756	2499

Amongst the monocotyledonous plants of this section, there are some of great economical and medicinal value. *Smilax glycyphylla* or the "native Sarsaparilla" is already known to medical men as a useful alterative. The various species of *Xanthorrhea* yield valuable resins; whilst many species of rushes and sedges may be utilized in the making of rope, mats, baskets, and paper. *Kentia monostachya* or the "Walking Stick Palm," is useful for what its name implies; *Livistona australis* is not only edible in the tender parts, but its fibre is employed in the making of hats; and *Ptychosperma Cunninghami* is the most elegant of the genus in New South Wales. *Typhonium Brownii* and *Colocasia macrorrhiza*, though poisonous in a raw state, may be used as food after a certain preparation, whilst the roots of *Heleocharis*, *Typha*, and *Scirpus* have been valued by the Blacks for their nutritious properties. *Zostera* was much employed for the stuffing of beds in the early days of the colony, and *Alisma plantago* has a colonial as well as a European reputation for its edible tubers. In Russia, this plant is regarded as efficacious for canine madness, and, in America, it is renowned as a remedy against the bite of the rattle-snake, but its virtues have been much overrated.

Amongst all the plants of this class, however, the grasses are by far the most important, as they afford the most valuable fodder for sheep and cattle, and are the most generally diffused. *Paspalum distichum*, though in the early days of the colony apparently a coast grass, has found its way up many of our rivers and established itself on alluvial flats. It is a good pasture grass but somewhat troublesome to agriculturists when it gets amongst the corn. The large genus *Panicum*, of which 21 species are indigenous in New South Wales, is placed by some writers as amongst those grasses which cause the fat of animals to be soft; but *P. decompositum* and some of the allied species are highly useful in many parts of the interior. This grass, though growing on poor soils, is one of the most nutritious of our grasses and the grains of it are made into cakes by the aboriginal natives. *P. crus-galli* and *P. obseptum* are sometimes termed "water-grasses," because they flourish most on the borders of lagoons or swamps. They are much eaten by cattle, but are not esteemed for fattening qualities. Baron Mueller reports very favourably of the genus *Andropogon*, especially of *A. erianthoides*, *A. refractus* and *A. Halappensis*. The last (which is common to Europe, Asia, and Africa), he says, "is a rich perennial grass. It yields a large hay crop, as it may be cut half a dozen times in a season, should the land be rich." Kangaroo grass *(Anthistiria ciliata* and *A. avenacea)* is one of the most productive of native grasses. An intelligent writer on Australian Grasses states "that with a sufficiency of this grass, a little turned by the sun, the working powers of horses and cattle can be taxed to the utmost. They keep in better condition, doing hard work, on this than on any other description of native forage"; and, then he adds, as a caution, "If closely grazed by sheep or cattle (the former in particular) all the year round, it soon dies out." *Microlæna stipoides* is a delicate nutritious grass, vegetating freely during the winter, and preserving its vitality in the summer. Of *Stipa* and *Aristida*, the graziers do not think favourably, as the seeds are not only injurious to the wool, but penetrate the skin of sheep and sometimes kill them. A squatter says that he once lost 800 out of 2000 lambs by placing them on a part of the run where *S. satacea* abounded. Baron Mueller speaks of *Cynodon dactylon* "as an excellent lawn grass," and "not without value as a pasture grass." So far as the county of Cumberland is concerned, *C. dactylon* or "Couch Grass" is perhaps the most valuable of grasses, as it grows rapidly, resists great heat, and possesses fattening properties. Some species of *Danthonia*, *Chloris*, *Sporobolus*, *Eragrostis*, and *Poa* (especially *E. tenella* and *P. cæspitosa*) are commended, but of *Glyceria fluitans* or the Manna Grass, the Baron remarks, "Excellent for stagnant water and slow-flowing streams. The foliage is tender. The seeds are sweet and palatable, and are in many countries used for porridge." *Festuca bromoides*, though not regarded by some as indigenous, is highly useful as it flourishes earlier in the spring than some of those enumerated, and thus furnishes fodder when most required. *Bromus arenarius* is much valued on runs in the interior, and, in conjunction with other herbage, affords nutriment to cattle.

The properties of our native grasses require to be investigated thoroughly. In the Victorian Agricultural Report, a distinction is made between those grasses which produce stearine and those which produce fat. Amongst the former are reckoned *Anthistiria Poa*, *Festuca*, *Danthonia* and *Eriachne*. It does not appear, however, that these grasses have been subjected to analysis, but it is said that in districts where such vegetation prevails the stock may be despatched to distant markets with a probability of arriving in good condition. If the cattle subsisted exclusively on grass, it might be possible to form some opinion in regard to the comparative value of our Australian genera for grazing purposes; but when we take into consideration the fact that the cattle feed not only on grass, but also on many other plants (particularly of the *Salsolaceæ*, *Amarantaceæ*, *Geraniaceæ*, and *Umbelliferæ)*, it seems difficult to arrive at any satisfactory conclusion. There can be no doubt that some grasses are more fattening than others, but until a careful analysis has been made it appears somewhat premature to declare, excepting in general terms, what genera are best adapted for the purposes indicated. Particular species have been long known for their nutritive principles, but when we come to speak of genera, little can be said for certain.

ON A NEW SPECIES OF EURYSTOPODUS.

BY E. P. RAMSAY, F.L.S., &c.

EURYSTOPODUS NIGRIPENNIS, *n. sp.*

Head with light ashy vermiculations and freckles; the feathers of the forehead, crown, and occiput with a black shaft line very broad on the crown of the head; chin, loreal region, and narrow band round the hind neck black, strongly tinged with rufous-chestnut; a narrow oblique patch of white on either side of the throat, but not joined on the chin, chest blackish brown, the tips of the feathers marbled with ashy, forming two roundish spots one on either side of the tips of the feathers, or confluent and forming irregular broken bands right across, sides of the body barred with a lighter ashy tint in the same way, the interspaces between the ashy bands, black; flanks, abdomen and under tail coverts strongly washed with rufous-chestnut and barred with narrow black bands; under wing coverts black, barred with rufous-chestnut, and interscapular region blackish brownish, marbled with ashy and black, those adjacent to the scapulars and coverts having a broad black stripe along the outer web of the feathers, shoulders black sparingly dotted with chestnut, the upper wing coverts black with ocelli of ashy and spots of chestnut, the larger series with indistinct bars on the inner webs and roundish deep chestnut spots on the outer; the inner secondaries very closely freckled, marbled, and vermiculated with ashy, which almost obliterates the chestnut spots and bars; the smaller scapulars are very closely vermiculated and marked with ashy; some having the ends of the feathers black, spotted with chestnut and distinctly margined on the outer webs with ashy, which when the feathers are adjusted form a defined band down the scapulars. The inner three secondary quills are brown much freckled with ashy and showing only remains of blackish bars of interscapulars. The remaining secondaries blackish-brown barred with rufous chestnut on the inner webs, the bars not reaching the shaft, the outer webs have remains of 7—8 bars or round well defined spots of a richer or darker rufous-chestnut, the outer webs of these feathers more inclining to black as they approach the primaries. The primaries black, the inner ones from the fifth quill inclusive, barred and spotted like the secondaries, the spots and bars become fewer and less distinct until they disappear altogether on the fourth quill; the first primary has an indication of a white spot on the margin of the inner web, which spot increases in size on the second, third and fourth quills, on which last (fourth) it forms a large white blotch and extends across both webs; on the outer web of the third is a small white marginal spot. The centre two tail feathers and outer webs only of the others and the upper tail coverts blackish with ashy marblings and freckles forming more or less distinct bands, the tips of all the tail feathers ashy, the inner webs of all the rest of the feathers with at least ten chestnut bars well defined except towards the tips where the ninth and tenth bars are somewhat broken and irregular. Tarsus feathered to the toes, bill black, feet brown. Length about 11 in.; wing 9 in.; tail 6; tarsus 0·7; mid toe 0·88, its nail 0·3; hind toe 0·35; bill from forehead 0·9, from gape to lip in a direct line 1·5 in. from nostril to the tip 0·35.

This species approaches nearest to *Eurystopodus albogularis* but is smaller, being about the size of *E. guttatus*, but different in the wing spots.

This specimen was obtained by Lieut. J. C. Farrie of H.M.S. Miranda, on one of the Solomon Islands.

NOTES AND EXHIBITS.

Note on Insects injurious to Gum Trees, by William Macleay, F.L.S.—I now exhibit two coloured drawings—one natural size, the other considerably magnified—of a caterpillar said to be very destructive to the *Eucalyptus tereticornis* in Gippsland. The drawings were sent to me a few days ago by Baron Mueller, who had received them from Mr. A. W. Howitt, the resident Magistrate, North Gippsland. In the absence of a specimen or even of any description, of the perfect insect, it is absolutely impossible to determine the species of Moth to which the larva belongs; but it apparently is of the genus *Orgyia*, Family Arctiidæ and Division Pseudo-Bombyces. In the genus *Orgyia* and its allies, the female is generally apterous, the abdomen swelling out into a huge mass of ova covered with the woolly clothing of the moth. I have never before heard of the numbers of any of this group of moths being so great in any locality as to injure trees. My object in now introducing this subject to the Society, is in the hope of drawing the attention of members to it, so that the summer may not be allowed to terminate without an attempt to solve the problem of the cause of the rapid destruction of our forest trees in many parts of the country. Some months a described to this Society a species of the Phasma group *(P canthus Wilkinsoni)*, which had been observed by Mr. C. S. Wilkinson, the Government Geologist, in enormus numbers near the Fish River Caves, where it had caused or appeared to have caused the death of all the Gum trees over a considerable tract of country. At the time Mr. Wilkinson witnessed this fact, the winter was approaching and the early frosts had already killed many of the insects, which were lying in heaps under the trees. It is now midsummer and the *Phasma*, if it has again commenced its ravages, must by this time be nearly full grown, and easily discernible. I hope therefore that all who have the opportunity will during their holiday wanderings, keep this matter in mind, and that they will let no chance escape them of closely examining for traces of insects the leaves of all trees in a dead or dying state in all parts of the country, but more particularly the neighbourhood of the Fish River Caves, the seat of Mr. Wilkinson's discovery.

Dr. Cox exhibited a Bowl obtained from the natives of San Christoval Island, by Lieut. Farie, of H.M.S. Miranda. This bowl is a little over 18 inches long and 6 inches wide, of an elongated oval shape, the bowl itself represents the body of a bird, and in front it is surmounted with the head of a bird which carries in its mouth a fish; the breast and shoulders of the bird are ornamented with inlaid pieces of Mother of Pearl all of a triangular shape, the base being always the longest side of the triangle, behind it has a flattened from above downwards, expanded tail also ornamented with the same pieces of triangular Mother of Pearl, and from the tail two long thin pieces of wood project representing long feathers projecting from the bird. Running from one end of the body of the bird to the other along the underside is a piece of wood which follows the conical shape of the body from one end to the other, and on which the bowl rests; the underside is not only convex from end to end is also convex from side to side, and is 2¼ inches wide at its widest part. This is not a common bowl, but is only used for serving the Chiefs of the tribes with food; the other natives of the tribes where this bowl was used were not as a rule permitted to have their meals served up in separate bowls as the chiefs' were. This bowl is cut out of one piece of wood.

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ANNUAL GENERAL MEETING,

WEDNESDAY, 25TH JANUARY, 1882.

The President, J. C. Cox, M.D., F.L.S., &c., in the Chair.

The President read the following address:

PRESIDENT'S ADDRESS.

Gentlemen,—Twelve months ago you did me the honour of electing me your president, and it now becomes my duty, before I vacate, in accordance with the regulations, that honourable position, to deliver this evening the customary annual address. In doing so, I will briefly pass under review the present position of the Society, the scientific labours of its members during my term of office, and the prospect of the progressive future of the association. To this I will attach, as worthy of our admiration and emulation, a few notices of the doings of other men, in other countries, who have recently startled the world by their brilliant researches and discoveries, not only of intense interest to the thoughtful of every grade and condition, but tending eventually to produce practical results incalculably beneficial. I can safely congratulate the members on this the close of the seventh year of the Society's existence, that the wishes and hopes expressed for its prosperity and stability by the first president, the founder of this Institution, in his inaugural address, have been up to the present time satisfactorily fulfilled; for during the past year the list of members has steadily enlarged, the contributors to the "Proceedings" have increased, and their contributions will undoubtedly, in my opinion, maintain, as hitherto, the favour of the press and of the naturalist. The donations and loans of books of a varied and reliable nature, appertaining to natural history, have greatly exceeded in number and value the gifts of the previous year; and our library now will bear, in its excellence, more than a fair comparison with those of other kindred self-supporting associations. This exceptional acquisition is due to the liberality of the founder of this Society, Mr. Macleay, by his recent munificent gift, being the second of a similar nature, of standard and scientific works exceeding 600 volumes. The loan also by the same gentleman, consists of a large number of works peculiarly suited to our wants.

Beyond these seasonable favours in aid of our Society, Mr. Macleay lately at his own cost caused a course of free lectures on the animal kingdom to be given, and engaged the services of Mr. Haswell, a gentleman thoroughly competent to do the good work. These lectures were well attended and appreciated, and consisted of no less than 20 in number, commencing with "Introductory remarks on life in plants and animals," passing through the various leading types of animal structure, and terminating with the life-history and structure of the mammalian group.

This liberal behavour in the cause of Science has elicited an appropriate response on the part of the Government; two rooms at the Garden Palace have been set apart for the Society—the one to be used as a library, a lecture room, and as a meeting and reading room for the members; the other specially as an office for the transaction of business by the council of the Society. The foregoing are facts well known to you, but I am desirous by their repetition that they should be known to others, and remembered.

The literary papers read by our corresponding members during the past twelve months contain, among other matters, many valuable notices of new species and interesting forms of Australian fauna, which, by their contributions to the general stock, must necessarily attract the attention of the naturalists at home and meet with their approval; and I am sure of this, that the members of this association may well feel gratified at the result of their friends' labours, and at the addition by the past year's issue to our library of a valuable work of reference.

Mr. William Macleay's "Descriptive Catalogue of Australian Fishes" is now completed, and will greatly exceed in importance what its title would lead one to suppose. It is, in fact, an exhaustive treatise on a subject which possesses a scientific and economic value, not easily to be over estimated, and I may safely predict that the catalogue will remain for many years to come the standard work on this peculiarly interesting group.

The republication, at the suggestion of the Rev. J. E. Tenison-Woods, of Menke's "Australian Shells" with descriptive notes by Professor Ralph Tate, of the University of Adelaide, will supply to Conchologists what was always felt as a great want, and this rare work now rendered more precious by the Professor's descriptive notes, will be accepted by them as an inestimable boon.

Another of our members, Mr. J. J. Fletcher, of Newington College, has enriched our pages by the record of a patient, and I am glad to say, successful investigation of a point in the anatomy of the female organs of the kangaroo. The satisfactory results he has obtained, together with the prospect of achieving still greater, will doubtles create much interest among the members of our Society. The space to which I am limited in this, as in other cases, will not permit of any lengthened remarks, but nevertheless, as supplemental to the paper alluded to, I will close this notice with extracts from a letter from Mr. Fletcher, which has just reached me; and I feel confident that every reader of this journal who may be in a position to do so, will respond to the appeal put forth in the last paragraph quoted, for assistance in procuring specimens for further anatomical researches:—"In his classical paper on the "Generation of Marsupial Animals" (1834), Professor Owen, the distinguished authority on Marsupial anatomy, opposed the view put forward by Sir Everard Home (1798) that a direct communication existed under certain circumstances between the median vaginal cul-de-sac and the urogenital passage, by which the fœtus of the kangaroo passed into the latter cavity. Subsequently having himself met with the direct communication in *Halmaturus Bennettii*, Professor Owen admitted (1865) its existence in the genus *Halmaturus*, but still contended for the cæcal condition of the cul-de-sac in the genus *Macropus*. Further investigation has since shown that the latter condition does not hold, for at any rate, one species of this genus, viz., *Macropus rufus*; and, indeed, there are indications that the existence of the direct communication is normal after parturition in kangaroos generally. With greater facilities of obtaining more abundant supplies of satisfactory material than falls to the lot of observers in distant lands, I hope in time to make a complete series of observations on the organs of all accessible species. In the paper recently brought under the notice of the Linnean Society of New South Wales, I began by giving some account of the controversy and the literature relating to the subject, and then described the results arrived at from the examination of the first lot of material which came to hand. These were that in females belonging to *Osphrantes robustus*, *Halmaturus ruficolis*, and *Petrogale penicillata*, species, with one exception, hitherto seemingly uninvestigated, the direct communication does exist after parturition, while in virgin females belonging to the first and last of these species, which are all I have so far had the opportunity of examining, the direct communication does not actually exist, though the condition met with is different to what has been described in *Macropus major*, inasmuch as the tissue of the cul-de-sac is continuous with that of the urogenital passage. *En passant*

I may say that I have just obtained some fresh material, the results of the examination of which I hope shortly to have the the honour of laying before the Society. I take this opportunity of again appealing for help in the way of such information as to good localities for collecting, or as to where 'drives' are about to be held, as some of our country members may be willing to afford."

The paper (see Vol. 6, p. 155, of our Proceedings), "On the occurrence of Artesian Wells in the Albert District," by Mr. C. J. Wilkinson, Government Geologist, although concise, relates to an event in our history of too important a character to permit me to pass it over in a superficial manner. I desire, therefore, to offer more fully my observations on this—the first notice of the successful supply of fresh water obtained by the artesian system—a grand established fact, and of vital importance to pastoral districts throughout the colony. I do so now, with the greater confidence of attracting your attention, as I am indebted to Mr. Wilkinson for much additional information on results arrived at by very recent borings at widely apart localities, all confirmatory of the stability of the preceding operations on the flat country between the Darling and Paroo Rivers, as detailed in the paper above mentioned.

It is necessary before proceeding further, and in order that I should be clearly understood, to mention that the distinction between an ordinary and artesian well is, that in the former the water-level lies below the surface of the ground, at the place where the well-bore is situated, and in the latter the water overflows continuously.

From near Carcoar, and running about N.W. at rather an acute angle with the Great Dividing Range, a line of primary rocks, at times of considerable elevation, extends far beyond Wilcannia on the Darling River. Near to, but above this locality, the vast expanse of water which in days long past constituted an immense lake, forced its way, by the friction of ages, through the primary rocks and formed the channel now known as the Darling River. By the consequent drainage effected by this means, and by percolation through the porous soil, the pastoral districts of Warrego, Barwon, Castlereagh, and Darling Downs were created.

I cannot say who first called attention to the inadequacy of the channel of the Darling River to carry off the rainfall of its basin, estimated at more that two hundred thousand square miles; but I find in the journal of the Royal Society of New South Wales an excellent paper on this subject was read on the 1st August, 1879, by Mr. Russell the Government Astronomer, who proved incontestably by reasonable calculations, founded on the lowest recorded annual rainfall, that the Darling River was wholly incompetent to perform the work of drainage for such an extensive area. The rain water, therefore, he argues must sink into the ground, and being to a considerable extent retained there, must afford an unlimited supply of good water.

These ideas have been fully confirmed by the success of the many common wells which have already been constructed in these districts, yielding an abundant supply of fresh water. But this method of procuring water does not effect the artesian system of equal if not of greater value, of securing a supply where the fountain-head is above the surface of the flat, and consequently where the flow of water is continuous without the aid of pumps or other water-raising apparatus. Beneath the surface of this drained flat lies at a considerable depth a thick deposit of the cretaceous period; and as you proceed further to the north the primary rocks before mentioned dip in a northerly direction, and the cretaceous deposit thickens. This stratum, strongly overlapped by impervious clay, ascends the adjoining rising grounds probably far distant, to a greater or less elevation, and being throughout of a porous nature, constitutes the fountain head of the channels which, originally fed by the rainfall, and still replenishes the waste of the subterranean pent up waters. This water being tapped on the lower lands will, as a matter of course, rise to the level of that on the hill side, irrespective of, and leaving untouched, the upper waters accumulated by percolation. Thus at St. Oen, in France, double pipes are used, one considerably larger than the other. The smaller pipe brings up the water from the lower stratum to the highest part of the jet, and the larger one from that of the upper stratum, so that two distinct streams of water are obtained at the same time for the supply of a canal basin. The same principle has also been adopted where the water was impure within the larger pipe, but kept apart by the inner pipe from contaminating the flow of fresh water applied to domestic purposes.

The first record, (I speak under correction) suggestive of the probability of obtaining in Australia *jet d' eaux* of pure water by artificial means, will be found in "O. J. Geological Society of London," Vol. 28, part 3, the article being contributed in 1872 by the late Mr. Richard Daintree, C.E., Government Geologist for Northern Queensland. After describing a hot alkaline spring on the Saxby River, a tributary of the Flinders, he considered that "the importance of this evidence as to the probability of finding artesian supplies of water in districts where such springs are met with, should not be lost sight of, and a bore put down in the vicinity of one of them (for this was not the only one) might be successful in obtaining water, and thus lead to most important practical results."

Mr. W. G. Bell, of Bimmerah Station, when camping in 1866 at Mr. J. T. Allan's Station, (Mount Enniskillen) on the Barcoo River, North Queensland, about 300 miles from the source of Flinders River, met with six or seven of these alkaline mud springs, which were from three to four feet high and with diameters of from five to seven feet. They were generally placed on the flat country at the foot of sandhills. The alkaline water, of rather a milky colour, was always trickling down the sides of these mounds, of which the surface was hard enough to walk upon. The soda or alkaline deposit was so strong that Mr. Bell used some in a pannikin to mix up "Johnny cakes," and it made them "rise" in a manner similar to that of bicarbonate of soda when used in cake-making. Within a few feet of the natural springs were large holes containing clear fresh water, the latter evidently supplied from the sandhills, and the former from a deeper source and strata far distant. Similar alkaline springs are also found near the Warrego, a tributary of the Darling River and the Diamantina, North Queensland Rivers.

These anticipated practical results have now been verified by the examples set forth in the paper previously mentioned, which was read by Mr. Wilkinson. Mr. David Brown, manager for the Messrs. Officer Brothers, sank several tube bores, at depths varying from 134 to 142 feet, at the mud springs of Wee Wattah and Mulyco, about 18 miles from the Darling River, and struck in all of them a strong flow of water, which in one case—the Wee Wattah well—rose in the bore, and flowed from the tube at a height of 26 feet above the surface of the ground. These pipes were only four inches in diameter, and, with the exception of one which still maintains its action, were soon choked by the fine drift and sand forced up from below. The result of these trial shafts must be considered as highly satisfactory, although impeded in their action by the difficulties invariably attendant upon all first attempts, and they possess the still greater value of being the precursors of similar undertakings throughout New South Wales and the other colonies.

Since writing down the foregoing for your consideration I have received from Mr. Wilkinson a paper on the "Artesian Water of the Albert Gold-fields," which was ordered to be printed by the Legislative Assembly, 15th November, 1881. The paper contains most important accounts of the sinking of two wells, Nos. 1 and 2, at the great depths of 488 and 572 feet respectively, on the Dunlop run, the property of Mr. S.

M'Caughey. As the water did not rise in either of them to the surface of the ground where the sinking was commenced, these wells can scarcely, at the present time, come under the category of the Artesian system; but as I conceive that the upward flow of water has been checked in attaining its proper elevation, particularly that in No. 1 bore, by the method of boring described, which would permit the diffusion of the rising waters by the different channels met with in the course of passing through such an amount of varied soil. This is well illustrated by the two shafts themselves, the water level of No. 1 reaching to 90 feet below the surface, and that of No. 2 to only 10 feet. The secret of this difference appears to lie in the fact that No. 1 did not possess the amount of tough impervious clay which No. 2 had to pass through. I need scarcely say that the uppermost well may be constructed of stone, bricks, or wood without any strict attention being paid as to the jointing; but the inner tube or pipe in its whole length must be perfectly water-tight, in order to secure higher levels and to prevent waste by diffusion, and contamination by mingling with impure waters. I cannot but think that had these bores been constructed on the principle described above, the water in both supplied by the porous cretaceous deposit would have overflowed the surface in a similar manner to the Wee Wattah wells.

These wells on the Dunlop run however, are a great success, and we are indebted to Mr. James Wilson, the manager of the run, for the perseverance and intelligence he has exercised so successfully in accomplishing this arduous undertaking. The two wells are numbered by Mr. Wilson as No. 1 Mount Wilson well, and No. 2 Kapiti well. The former is briefly described by Mr. Wilkinson in the Annual Report of the Department of Mines for 1880. He reported conjointly with Messrs. Bruce and Gilliat, that "on the Dunlop Station a bore was put down to a depth of 488 feet, when a strong supply of fresh water was struck, which has risen to within 90 feet of the surface. In this well the water-bearing strata belong to the cretaceous formation. This formation occurs in Queensland, and the discovery of it at Dunlop is of great importance, as indicating its extension under the pleistocene formation, throughout the low-lying portion of the basin of the Darling, and also the probability of its yielding good water. In this district we have, therefore, two sources of water supply —first, from the pleistocene drifts, and secondly that from the underlying cretaceous beds."

Subsequently on the 6th November, Mr. Wilson communicates to Mr. Wilkinson the following important results, obtained by him at No. 2 Kapiti well. "It is deeper than Mount Wilson well, and the spring of water much stronger. It rises to within 10 feet of the surface. There is about 50 feet of tough black clay not found in Mount Wilson shaft. These two wells I think clearly prove that a good supply of fresh water can be found underneath the salt water."

"The second deep well on Dunlop is called No. 2 Kapiti, 20 miles west of Mount Wilson well, and is 572 feet deep, the water rising to within 10 feet of the surface. These two wells are a good test that fresh water lies underneath the salt water at a depth of from 500 to 600 feet, and that it will rise in the shaft to a practicable bailing distance, so that it can be made available for stock. Kapiti well was started two and a half years ago, a six feet by three feet shaft with a centre was sunk to a depth of 300 feet; it was then abandoned for a time, as it was considered too expensive to go on with the shaft. Salt water was struck in this shaft at a depth of 16 feet, this water was not fit for stock, and had to be puddled back; no good puddle clay could be found in the locality, so it had to be carted 30 miles, and after two attempts the puddling was successfully accomplished. Sinking then went on to a depth of 240 feet from the surface through a hard blue clay, similar to the strata gone through at Mount Wilson, containing shells, water-worn pebbles, and petrified wood. At the last-mentioned depth a layer of hard sandstone rock was met with 2½ feet in thickness; this had to be blasted, and a small supply of slightly brackish water was obtained from the rock. The sinking from this to the 300 feet level was through blue clay, containing marine shells. &c. The strata gone through in boring was similar to that in sinking,—viz., blue clay. with fossils. At 500 feet from surface it changed to tough black clay, containing fossils as before; this black clay was not found in Mount Wilson well. This clay was so tough that the tubing stuck in it, and boring had to go on without it. At a little over 550 feet from the surface we came on another layer of hard sandstone rock, 5 feet in thickness; this was the most difficult part of the work, as we now had no tubing to guide and protect the jumper on its up and down stroke; it caught on the side of the bore, and at one time it was hoping against hope, as no progress could be made. Having gone so far we could not stop at that point; at last we succeeded in getting through the rock. The remainder of the distance we were able to bore with the auger, it being through soft sandstone and no fossils in it. When water was struck, the auger dropped about two inches, into a white sand, the force of water being so great that it drove the sand up the bore to the platform on which the men were standing, six feet above the bottom of the shaft. The water was quite hot when it first came up, so much so that it filled the shaft with steam. Mount Wilson and Kapiti wells go far to prove that there is a fountain of wealth lying hidden beneath the surface at from 500 to 600 feet."

The wells at Liverpool Plains have been in use for many years; the shafts sunk are in general large, too large, and rudely constructed, and the water for supplying sheep is commonly raised by the most primitive method, with however, a few remarkable exceptions, one of which I intend to quote; but no attempt has yet been made by the employment of the artesian system to secure an elevated continuous flow of water, so needful for practical purposes. Ninety to a hundred of these wells have been most ably described by Mr. Abbott, P.M., in the Journal of the Royal Society of New South Wales, Vol. 14, p. 281, 1880, and nearly all of them partake clearly of the artesian character. These wells are usually sunk on or near to, the slope of a hill, over the spot where a natural spring is seen to exist, and the shaft, on touching water at a depth of less than a hundred feet, derives, from strata of sand or gravel, a supply very abundant, indeed greatly in excess of that in any of the wells in the Albert district, as described by Mr. Wilkinson. Mr. Abbott suggests many improvements, at a tenth of the cost, on the present method of shaft-sinking, to the propriety of which I assent, but beg to add that, in all probability, a second and distinct supply could, if required, be had by passing a much smaller pipe down the larger one until the cretaceous deposit was reached.

I will now read a few brief extracts taken from Mr. Abbott's interesting details, in order to show the enormous underground supply of excellent water to be had on demand:—"Beyond Bando head station, and situated on the side of the same range of mountains, there are two remarkable springs called Tambar. These springs are about 100 yards apart, four miles from the plain, and elevated above it somewhere over 200 feet. In one the water is contained in a deep cup-like cavity in an otherwise dry and stony-looking spot, and flows across the main road from Boggabri to Coolah. The outflow from this spring varies considerably with the state of the weather. On bright sunny days the flow is only about 120 gallons per hour; and on a dull, cloudy day (although no rain may be falling) the outflow sometimes reaches 400 gallons per hour. The second spring is situated about 40 feet lower than the one just described, and the outflow averages 1200 gallons per hour. I carefully examined the range and could not discover the existence of any sufficient catchment from which these springs might derive their supply. My observations lead me to the belief that the fountain-head is situated many miles from where the springs break forth. Upon the plain in front of Tambar some wells have been sunk 100 feet deep without obtaining water. Tambar is elevated over 200 feet above the plain, and the water flows from the surface. To the north-west of Bando there is a most remarkable spring at Garrawilla head station, and upon a recent visit I availed myself of the opportunity to measure the outflow. I found that this spring yielded the enormous quantity of 9,600 gallons per hour. I rode over the spring where it first makes its appearance, and was surprised to find the ground quite hollow for the space of upwards of 100 acres, and upon listening attentively one could hear the sound of rushing water under foot. In many places there happened to be large fissures or holes in the ground, and the water could be seen rushing along on its subterranean course at a depth of about three or four feet from the surface. A large dam has been erected below this spring, and one of the most extensive sheep-washing establishments in the colony is supplied with water by powerful engines from this dam. The whole area of the valley in which the spring arises does not exceed 2,000 acres, and the yield per annum at the rate quoted, amounts to nearly eighty-five millions of gallons of water. There can be no doubt whatever that the source of this spring is far removed from the drainage area of the valley in which it occurs."

These cretaceous or mesozoic formations occupy about one-third of the total area of Queensland, which, together with the vast expanse of our own water-bearing strata, afford for serious and thankful reflection a grand illustration of the magnitude of the living pent up waters, which only await the touch of the magic rod to spring forth and diffuse inestimable blessings far and wide.

I may here observe that the fossil remains of the huge diprotodon, of the crocodile, and of the gigantic land lizard, are found in these localities, buried among the drifts of the pleistocene period.

For several years past, although recently exaggerated in extent, there has existed a malady among cattle and horses, principally in the Upper Hunter and Bathurst districts, caused by the ravages of a minute parasitical insect, and which, when microscopically examined, will, in my opinion, be found to be a species of that odious family the *Holetra* of Hermann, and nearly allied to that portion of the genus *Acarus* which in other countries live on the skin or in the flesh of various animals, and reduce them to a state of great debility. I lay this important matter before your notice in order that some of our resident microscopists may be induced to institute an investigation into the true nature of the evil, and thereby be in a position to point out an effective remedial measure, so as to check the further spread of the disease. These parasites appear to attack only those animals depastured on clover, lucerne, or other introduced food, and to infest exclusively those parts where the hair is white, either in its natural state or arising from spur-marks, abrasions of the saddle, brands, or other wounds. Thus the stock, whose bodies are wholly or partially white, or those with white faces and legs, or with a star on the forehead, suffer only on those places where that colour exists, the skin in such parts being commonly of a pinkish colour and of a more tender texture. These insects in innumerable numbers are probably bred under the skin and burrow into the flesh, inflicting so much irritation that the hair can be peeled off in large masses, leaving the skin underneath as if scalded. The popular belief in the country districts is that these scalded-like patches are caused by the aphis on the pasture. The mischief thus arising has caused the death of many valuable animals, while others have been rendered lame; but the majority, by constant pain and irritation, have been thrown out of condition, and consequently wholly unfit for the market. Until this last year this pest has been confined to horses and cattle, but I now learn that in the Bathurst district sheep have been attacked, and many have suffered severely. After shearing, where the wool is opened down the back, it was found that this disease had been contracted by sheep, the wool having been cast off and leaving underneath a raw surface, on which it is feared it will never again grow.

The last examination of the Wellington Caves was made by Mr. Henry Barnes, Articulator of Skeletons, under the superintendence of the Curator, by direction of the Trustees of the Australian Museum, and the search for fossil organic remains commenced on the 12th July and terminated on the 17th November 1881. The Wellington Caves consist of a cluster of four or five caves, adjoining each other but distinctly apart. The first and second caves, on being searched, contained no bones, the former having a pond of water in it. The third cave is the cave or chasm from which the late Sir. Thomas Mitchell obtained, many years ago, the original specimens of fossil relics which were forwarded to Professor Owen, of the Zoological Society of London. Here a shaft was sunk, commencing at the surface of the ground immediately over the cave and descending through the roof. This shaft pierced through a very hard breccia, which contained bones, more or less, throughout its length; among these, half of a lower jaw, quite perfect, of *Thylacoleo*, was discovered. The fourth cave is the largest of the group, and was the one most carefully searched, by the aid of numerous shafts and trenches, for organic remains. This cave is of an irregular squarish form, with the floor descending from the entrance, and its length is about 500 feet, with a varying height up to 60 feet. A short distance from the entrance, the passage widens to some length into a broad alley, turning decisively towards the left; then, by a sharp, almost rectangular bend—also to the left—it narrows, till it reaches a stalagmite mass of rock, named by the explorers the Pulpit, where the course is interrupted by a barrier of rock; and the cave then turns, forced again to the left, at nearly a right angle, to continue its way to an abrupt termination, at which there is a deep well, at a point in the immediate neighbourhood of the entrance to the cave but at a much lower level. At the Pulpit bend there is a considerable barrier of rock, which causes the watercourse to deviate abruptly, and it is between this barrier and the preceding rectangular bend that the great mass of bones have been recently obtained. It would thus appear as if the bones had been indiscriminately drawn in by a whirlpool, as Professor Denton suggests, and then on meeting with this obstruction settled down and were retained there. Between the two points just mentioned, no less than nine shafts and trenches were sunk in the floor of the cave, in some of which scarcely any relics were obtained: in others, adjoining the barrier, considerable quantities were found. Amongst these the most interesting were several perfect lower jaws of the *Thylacoleo*, incisor and molar teeth and a rib of the *Diprotodon*, teeth of a gigantic kangaroo, the largest pelvis of a kangaroo yet discovered, portions of the jaws and teeth of *Thylacinus* and *Dasyurus*, the shoulder-blade and claw bones of a monstrous *Echidna*, and a vast number of the bones of wombats, birds, rats, mice, &c.

One of the most valuable of the remains amongst these discoveries is that of a very large radius and ulna, quite as large as that of an ordinary tiger, and very similar in form. These bones were found in the same trench with the lower jaws of the *Thylacoleo*, and it is more than probable that they will turn out to belong to that animal. The radius is 10 inches long, much enlarged at its carpal end, which is one inch and three-quarters, and shows a well-marked articular surface for the reception of the carpal bones. It shows a second articular surface on the inner side of the enlarged end articulating with the ulna. Above, it has a distinct cylindrical head, depressed on its upper surface into a shallow cup; and round the circumference of the head is a smooth articular surface, showing that it rotated freely on the ulna, and hence the possessor had free power of pronation and supination. The ulna measures 11½ inches long, and 2¼ from the inferior margin to the top of the coronoid process. The position of the condyle of the lower jaw of the recently acquired specimen of the *Thylacoleo* being on a level with the molar teeth; the absence of any peduncle or neck to the condyle, making it perfectly sessile; and the ascending ramus of the jaw, springing almost from the base of the condyle, are important facts in determining the habits of this extinct mammal, the habits about which so much dispute has arisen. These structural characters so closely resemble those of the *Thylacinus* and *Dasyurus*, both highly carnivorous animals of the present day, that we must necessarily arrive at the conclusion that Professor Owen was correct in originally determining from imperfect specimens, that the *Thylacoleo* was an animal of predatory and ferocious habits.

I have great pleasure in taking advantage of this opportunity to add my tribute of respect to the veteran comparative anatomist, who on so many occasions has deduced from a single fragment of its structure, the entire animal; and as instances I need only mention out of the many, the *Dinornis giganteus*, the gigantic Moa of New Zealand, determined from an old marrow bone, about six inches thick, and having both extremities broken off; the *Zeuglodon macrospondylus* a huge oceanic mammal allied to the whale, from a miroscopic examination of the teeth; and the *Megalania prisca*, the Australian gigantic land lizard, from three imperfect vertebræ. The first notice and description of the remains of this gigantic land lizard were written by Professor Owen, in June, 1858, from some fossil bones which were obtained from the bed of a tributary of the Condamine River, in Queensland. These remains consisted only of three of the vertebræ, as before mentioned, a notice of which will be found in the "Philosophical Transactions of the Royal Society of London," Vol. 149, p. 43, 1858.

On the 15th April, 1880, Professor Owen read before the same society the results of study of such portions of the skeleton as have come to hand during the last twenty years. These observations are embodied in parts II. and III., with descriptions and plates of this gigantic *Lacertian* species—a contemporary in Australia with the large extinct marsupial mammals, the *Diprotodon* and *Thylacoleo*, &c. In these two last parts there are no less than eight well illustrated plates of the bones found and illustrations of lizards in a perfect state which this monstrous reptile most likely resembled on a large scale. Some notion of the size of this gigantic lizard may be formed by my stating that one of the bones (the ante-penultimate caudal segment) measures fully 11 inches across.

I would like to draw the attention of our members to a work recently published by Charles Darwin, on a subject which has so far received but little attention at the hands of naturalists. I refer to our earth worms. The publication of this work may induce some of the members of this Society to take the subject up.

This work is spoken of in "Knowledge" of 4th November, 1889, as follows:—"No man of science of our day understands better, or applies more thoroughly than Darwin the principle laid down by Lord Bacon, that 'Man, as the minister and interpreter of nature, does and understands as much as his observations on the order of nature permits him, and neither knows nor is capable of more.' To one who rightly apprehends this, the fundamental principle of modern scientific research, small things and great, so only that they illustrate the order of nature, are alike worthy of study. Perhaps the most remarkable result of Darwin's observations is the stupendous work accomplished by creatures so small and weak. It was objected against the views which he published in 1837 that worms could not possibly burrow to a depth of several inches into the fragments of cinders, burnt marl, &c., which had been strewn over the surface of meadow land. But now Darwin is able to speak confidently of their burrowing into the remains of Roman villas and pavements. He shows also how ancient encampments and tumuli have been gradually lowered by the agency of worms. Grass-covered slopes undergo perpetual denudation through their operation, the covering of grass remaining all the time intact, and even the inclination of the slope remaining unchanged. It may well seem incredible to the superficial reasoner that creatures like worms—small, weak, and soft-bodied—should produce such results; nay, results far greater in the course of time, changing as they do the entire aspect of a country."

It is this inability, as Darwin well remarks, "to sum up the effects of a continually recurring cause which has often retarded the progress of science, as formerly in the case of Geology, and more recently in that of the principle of evolution." When men like Sir John Herschel or Sir Charles Lyell have spoken of the effects of slowly-acting causes in modifying continents and seas, they have been ridiculed by the thoughtless, who cannot see how the downfall of rain, the slow movement of rivers, the play of waves on shore-lines, can produce such results. In like manner the Biologist is ridiculed who, noting small changes in various races in short periods (or even in periods which to our conceptions seem long), points to the effect of such changes when multiplied during the lapse of those long periods of time of which the earth's crust tells us. But our author has shown how even creatures so tiny and weak as the coral animal have made large islands and long lines of sea-resisting reefs, by constant labour; and now he shows how under our very feet the despised earthworm is changing the form and nature of the land we live on. When we learn that the rich dark mould in which vegetation thrives best is made by worms, we see that not only the aspect of a country, but the condition of its inhabitants, and even its history, have been modified by their work. So that we may accept in its widest significance his remark that "it may be doubted whether there are many other animals which have played so important a part in the history of the world as have these lowly creatures."

Mr. Macleay, in his presidential address read before this Society six years ago, drew attention to the importance of studying and following out the life history of parasite plants of low organization. He stated as his opinion that it would in all probability be found that the plants which produce infectious diseases would be found to pass through different stages of existence, much in the same way as animal parasites have been found to do.

Since Mr. Macleay read his paper this germ theory as a cause or source of disease has received much attention by scientific men in all parts of the world, and it is truly wonderful what discoveries are being made in scientific medicine as to many diseases and ailments, symptoms which hitherto were quite unexplainable being now proved beyond all doubt to be owing to the presence of fungoid organisms. To illustrate what I mean I cannot do better than make quotations from some of the most recent records on this subject. The theory of vaccination, and the irregular effects of lymph applied to the human subject, are having much light thrown upon them by this same line of study, and as the study of these germ theories advances, it is not unreasonable to hope and expect that several diseases other than smallpox will be checked and mitigated in their ravages on the human body on the vaccination principle. I will first quote from an address by Professor Liston, delivered before the Pathological Section of the British Medical Association in August, 1880, altering his words occasionally only for the sake of brevity. Nothing could illustrate better the advance of science in this direction, and be brought forward as an argument for the benefits accruing from a study of natural history:—"The relation of micro-organisms to disease is a subject of vast extent and importance. If we compare the present state of knowledge regarding it with that of twenty years ago, we are astonished at the progress which has been made in the interval. At that time Bacteria were little more than scientific curiosities, whether animal or vegetable few people knew or cared; that they were causes of putrefaction or other fermentive changes was a thing scarcely thought of, and the notion that they had special relations to disease would have been regarded as the wildest of speculations. *Bacillus anthracis* is now universally recognised as the cause of splenic fever so fatal amongst cattle, and is capable of being communicated to other animals and to the human subject, as illustrated by the so-called "Woolsorters' Disease." This *Bacillus*, compared with others known, is of large size, the rods of which it is composed being nearly one-fourth in diameter that of the red corpuscles of the blood of the mouse. Koch, to whom we owe so much for the study of this subject, has added to our conviction that the *Bacillus* is the cause of the symptoms, as it is impossible to suppose that an organism can develope in such enormous numbers at the expense of the vital fluid as they are found by him not only to be present in the spleen and other organs but that they people the blood in the minute vessels of all parts. Koch found that if putrid liquid is injected under the skin of a mouse it may die in a short time as the result of the chemically tonic effects of the products of putrefaction absorbed into the circulation; if it survive this primary disorder it may die in the course of about two days of blood disease. The point of a lancet being dipped into the blood of a mouse which has died in this way and the skin of a healthy mouse being scratched with this envenomed instrument, this second mouse dies with similar symptoms to the first, and the same thing may be continued from mouse to mouse, through any number. On making sections of the tissues of these animals so diseased, they were found to be peopled with *Bacteria* in enormous numbers, not so large as the *Bacterium anthracis* and more delicate, one-eighth of the diameter only of the *Bacillus anthracis*. This disease produced in the mouse is totally distinct from pyœmia, and thus it is shown by Koch that septicœmia may exist as a deadly blood disease, caused by the development of micro-organisms equally distinct from pyœmia, and from the chemically tonic effects of septic products. Koch found, beside septicœmia, a local affection of the seat of inoculation, in the form of a spreading gangrene. In this gangrene he found another organism, formed very differently from that of the septicœmia, a Micrococcus. Believing that this must be the cause of the gangrene, he succeeded in separating it from the bacillus of the septicœmia. Koch found that the bacillus of the septicœmia produced in the domestic mouse would not produce that disease in the field mouse, but the Micrococcus of the gangrene, &c., did develop among its tissues, and when this newly-developed micrococcus was inoculated into another mouse, it developed gangrene pure and simple. Koch inoculated a rabbit with a putrid liquid, which produced a special erysipelatous inflammation, and in this inflammation he discovered another exquisitely delicate bacillus, resembling the micrococcus of the gangrene in its development, and concluded that it constituted the *Materies Morbi*."

Professor Liston also refers to another micro-organism discovered by Toussaint, and which has been made the subject of special investigation by M. Pasteur—the so-called Cholera des poules, characterized by great swellings of thec hain of lymphatic glands in the vicinity of the windpipe of the fowl, inflammation, and effusion into the pericardium, and congestion, and it may be ulceration of the duodenum. It is a blood disease, highly infectious. If the blood or excreta of diseased chickens be mixed with the food of other healthy chickens, four out of six are affected and die. It is supposed that it is communicated by the artificially diseased food passing over an abrasion in the lining surface of the mouth or throat, as the disease is at once produced by inoculating a chicken in the mouth with the blood of a diseased fowl. M. Pasteur found that this micro-organism could be readily cultivated outside the body of the fowl, not in every medium but luxuriantly in chicken broth, and in infusions of meat. The transverse diameter of this bactarium is about 1·50,000 to 1·25,000 of an inch. Pasteur found that this bacterium could be produced in any number of successive cultivations, and yet retain its full virulence. A healthy chicken being inoculated with it, was as surely affected with the disease as if inoculated with the blood of a diseased fowl, conclusive evidence that the organism was the cause of the disease. The growth of this organism occasions no putrefaction in the liquid, so that this is an example of a bacterium which is most destructive as a disease; but which at the same time, is entirely destitute of septic property. After this bacterium has grown for a certain time in a portion of chicken broth it ceases to develop further, and the broth is found to have lost only a small proportion of its substance by weight, has not undergone putrefaction, and still continues an excellent pabulum for other forms of bacteria, yet the bacterium of the fowl cholera (so called), though introduced from some new source. is incapable of growing in it.

This fact seems highly suggestive of an analogy with the effects of vaccination or those of an attack of measles, scarlatina, &c., in securing immunity from the disease for the future. Here we have a certain medium invaded by a virus capable of self-multiplication, as is the case with those diseases in the animal body; the medium itself little affected chemically by the growth of the virus within it, but nevertheless rendered unfit for the development of that virus for the future. But something more than the suggestion of analogy with vaccination has been effected by M. Pasteur. By cultivating this bacterium in a particular manner he enfeebles the organism and produces such an alteration in it that when inoculated into a healthy fowl it produces only a modified and no longer a fatal form of the complaint, but the fowl is thereby rendered secure against taking the ordinary form of the disease. It has been really vaccinated, if we adopt M. Pasteur's extension of the term vaccination to other similar cases; but though the vaccination with the modified bacteria of the fowl-cholera dees not occasion the fatal disease, it produces pretty severe local effects.

Professor Liston mentions other important experiments which have proved successful in preventing contracting a disease in its fatal form. Cattle have been inoculated with the blood of a guinea pig which had died of splenic fever. This suggestion was first made by Dr. B. Sanderson and followed out by Dr. Greenfield, and it has been found that by inoculation in this way cattle become "entireiy incapable of contracting splenic fever, remaining free from either constitutional or local manifestations of it." Is it essential that micro-organisms should develop in the blood of the animal in which immunity from further attacks of the disease is to be secured; or is it possible that the necessary influence upon the system may be exerted by merely chemical products of the growth of that organism in some other medium? With a view of solving these questions he tells us that Toussaint performed experiments by injecting into the blood of healthy sheep blood taken from an animal affected with splenic fever deprived of *Bacillus anthracis*. If this blood so treated is injected into the circulation of a healthy sheep it produces a true vaccinating influence, securing immunity from splenic fever, but in order that this change in the constitution of the sheep may be brought about a certain period of time is essential; if a sheep so vaccinated be inoculated with anthrax within a few days of the operation, it will die of splenic fever, but if not for twelve or fifteen days complete immunity is found to have been produced. "I need hardly remark on the surpassing importance of researches such as these. In ten years hence some one may be able to record the discovery of the appropriate vaccine for measles, scarlet fever and other acute specific diseases. *Bacillus anthracis* is morphologically identical with an organism met with in infusion of hay termed hay-bacillus. *Bacillus anthracis* refuses to grow in hay infusion, and hay-bacillus is incapable of growing in the blood of a living animal; both grow in diluted extract of meat, but their mode of growth differs. Dr. Buchner finding this, carried on experiments to solve the problem of the possibility of changing *Bacillus anthracis* into hay-bacillus and the converse; he proceeded to cultivate *Bacillus anthracis* in extract of meat. For several hundred successive generations he found that bacillus so cultivated lost its power of producing disease by inoculation. Dr. Greenfield has confirmed this, and has found that after about six generations it looses its infective property."

"Then as experiments proceeded the modified *Bacillus anthracis* was found capable of growing in an acid hay infusion, and presented in every respect the characters of the hay-bacillus; and ultimately the converse feat was accomplished by Buchner. The *Bacillus anthracis* so developed were introduced into the mouse and the rabbit. Large quantities of it caused death rapidly from chemical tonic effects; when smaller amounts were injected after the period of these primary effects had passed, a fatal disease supervened, attended, as in anthrax, with great swelling of the spleen, the blood of which was found peopled with newly-formed *Bacilli;* and the spleens affected in this way were found to communicate anthrax to healthy animals."

Supposing these results to be trustworthy, I need scarcely point out their transcendent importance as bearing upon the origin of infective diseases and their modifications as exhibited in epidemics. Dr. Brantlecht has repeatedly found a species of bacillus in the water used for drinking by the inhabitants of affected districts. These organisms he found only half as thick as a similar organism found in the urine of patients suffering from typhus fever. The difference in the effect of water containing this typhoid-producing bacillus, compared to water holding other forms, is very marked. Such water is not fetid, like water containing great masses of the *Bacterium termo,* but smells somewhat like boiled milk. Such water has been found by Dr. Brantlecht not to be deprived of its power of producing typhoid if distilled rapidly, but if boiled for some time it is rendered harmless at ordinary temperatures; it grows in spring water very slowly. These *Bacilli* are found to abound in the urinary excreta of typhoid fever patients.

This is another step in the right direction, and will easily answer those who ask—What good is to be expected from such

Societies as this? The study of these organisms is one of our many duties and privileges, and the study of them is the way in which this and kindred societies may be of use to our fellow-beings.

On the motion of the Rev. J. E. Tenison-Woods, a cordial vote of thanks was accorded by the meeting to Dr. Cox, for his valuable and interesting address.

The Treasurer's statement showed:

	£	s.	d.
Balance from 1880 and receipts	276	11	9
Expenditure during the year 1881 ..	238	0	0
Balance	38	11	9

On the motion of Dr. MacLaurin, the following gentlemen were elected Office-Bearers, and Council, for the year 1882:—

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ERRATA VOL. VI.

Page 389, line 11 from bottom—	For Amneocola.. ..	Read, *Amnicola.*
„ 397, „ 7 .. .. .. —	„ Ditoma	„ *Diloma.*
„ 408, „ 14 .. .. .. —	„ gramma	„ *granum.*
„ 439, „ 12 from bottom „ 453, „ 13 „ „	„ Amplexa	„ *Aplexa.*
„ 554, „ 4 .. .. .. —	„ 17	„ 16
„ „ „ 6 .. .. .. —	„ Valvatridæ ..	„ *Velvatidæ.*
„ „ „ 9 .. .. .. —	„ Assunmiadæ ..	„ *Assiminidæ.*
„ „ „ 12 .. .. .. —	„ 189	„ 186
„ „ „ 13 .. .. .. —	„ lininophila ..	„ *Limnophila.*
„ 556, „ 19 .. .. .. —	„ vullata	„ *bullata.*
„ 563, „ 5 from bottom „ 564, lines 1, 6, 15, and 21	„ Bithyinella ..	„ *Bythinella.*
„ 721, line 2 from bottom—	„ rick yellow ..	„ *rich yellow.*
„ 726, „ 5 from top .. —	„ the male	„ *the adult male.*

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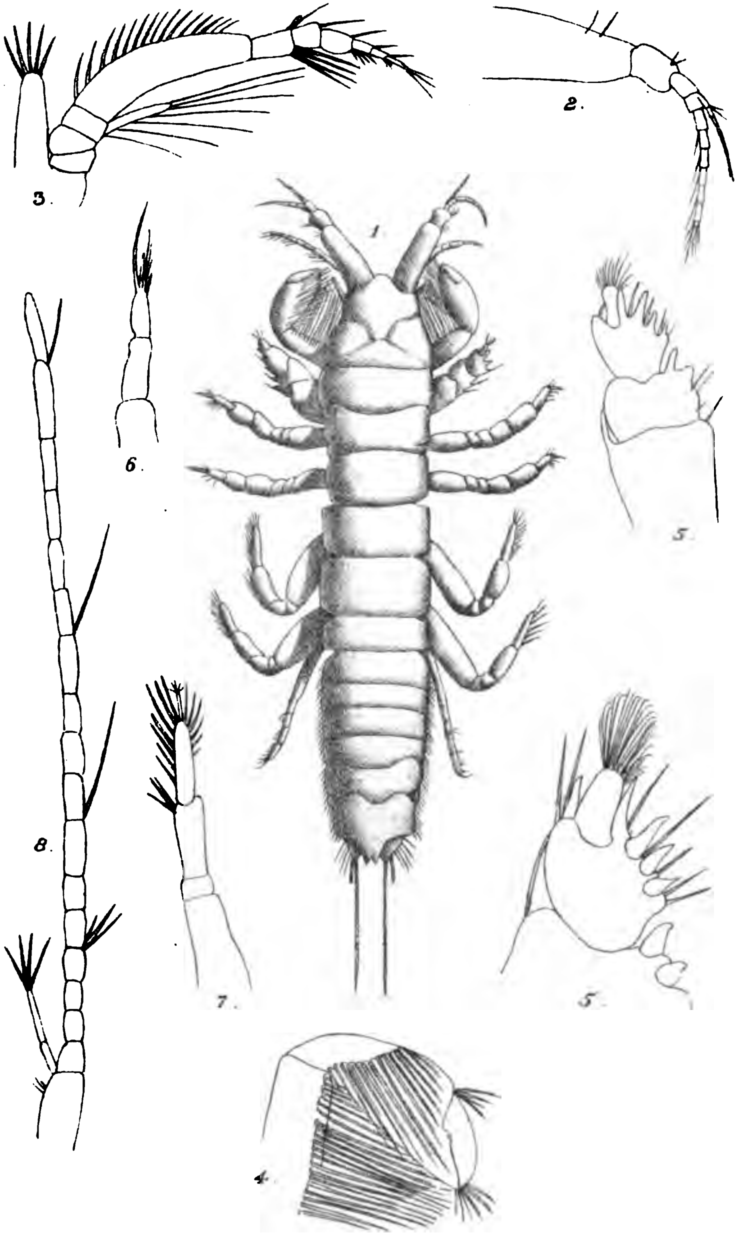

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